

UITP Input to COP30 Presidency Roadmap for Transitioning Away from Fossil Fuels in a Just, Orderly and Equitable Manner

Transport is the fastest-growing energy-consuming sector, accounting for around 30% of global energy demand, with road transport responsible for the vast majority (approximately 75%) of that share, primarily driven by passenger private vehicles. Yet it remains overwhelmingly dependent on fossil fuels, with renewables making up only about 4.6% of total final energy consumption. While electric vehicles and biofuels are expanding, rising travel demand continues to outpace decarbonisation efforts – most notably in our cities. In this context, public transport has a pivotal role to play in accelerating the energy transition away from fossil fuels while improving transport energy efficiency.

(a) What are the most critical barriers — whether physical, economic, financial, institutional, technological or social — preventing a transition away from fossil fuels?

The technologies required for renewable energy in public transport and transitioning away from fossil fuels are already available and increasingly cost-competitive. However, progress is constrained less by technology than by political, financial and institutional barriers. These include fragmented governance, fossil fuel subsidies, limited access to affordable finance, inadequate regulatory frameworks, and capacity gaps in skills, planning and implementation.

(b) What potential levers, whether economic, financial, institutional, social or technological, exist for accelerating the implementation of the transitioning away commitment?

The transitioning away from fossil fuels and expanding renewable energy solutions in the transport sector needs to be embedded in a wider framework of action on transport, which will bring integrated benefits in line with the Sustainable Development Goals (SDG). The Avoid-Shift-Improve Framework for Transport is well-placed to embed renewable energy solutions in wider action frameworks to support urban decarbonisation efforts. To avoid and reduce the need for motorised transport, city governments have improved walking and cycling infrastructures alongside public transport and supported efforts to manage transport demand. They have also encouraged the shift to more efficient and less carbon-intensive modes of transport, such as public transport, including rail, metros, buses and trams. Public authorities have also complimented city efforts to improve transport system efficiency, vehicle technology and fuels by procuring renewable fuels and renewables-based electric vehicles. This approach is being accelerated through the Action Agenda - Axis IV: Building Resilience for Cities, Infrastructure and Water; Key-objective: (13) resilient urban development, mobility, and infrastructure; Plan to Accelerate Solutions **Scaling up public and sustainable transport in cities (led by UITP).**

Shifting travel to more efficient modes such as buses, rail and metro — alongside walking and cycling — can significantly reduce overall energy demand. Public transport moves far more people with far less energy per passenger-kilometre than private cars, meaning that a mode shift alongside electrifying public transport fleets and powering them with renewable energy offers one of the most cost effective and scalable pathways to cut fossil fuel use in transport.

National rail operators and city public transport authorities are often among the largest single electricity consumers and landowners in their countries and cities, respectively. This positions them as powerful actors that can stimulate and drive investment in renewable energy through

long-term power purchase agreements, on-site generation, and fleet modernisation. Public transport should therefore be viewed as a significant lever to drive both efficiencies and reducing energy demand in transport, clean energy scale-up and transitioning away from fossil fuels.

(c) What country, regional or sector roadmap experiences, best practices, and lessons learned can be shared?

While not all the policy levers are held by local governments and public transport authorities, especially in smaller cities, several solutions to decarbonise transport, address emissions and improve air pollution exist. There is no single solution that will work in every locality. Adapting to the physical environment, local policy and governance capacity, citizen needs, and financing/funding sources are all fundamental to the success of any public transport plan.

Successful approaches from public transport operators and authorities around the world indicate that there are actions that can be undertaken by local and national governments to advance and scale up efforts of renewable energy in public transport and transition away from fossil fuels.

- 1. SET AMBITIOUS TARGETS FOR PUBLIC TRANSPORT AND BACK THEM UP WITH SUPPORT POLICIES:** Targets provide some certainty for decision makers and the private sector. At the same time long-term regulatory, governance and financial frameworks should be put in place for further certainty as well as practical delivery. Both zero public transport emissions and fleets alongside renewable energy targets should be set (most notably in Nationally Determined Contributions (NDCs)), and actions should be taken to directly support achieving them. Shifting to renewable energy sources needs to be underpinned by additional emission-reduction strategies and targets embedded in a wider Avoid-Shift-Improve policy framework. When deciding on technological options, a wide range of factors should be taken into consideration – from market availability and infrastructure needs, to ‘cradle to grave’ and wider sustainability considerations.
- 2. BUILD THE BUSINESS CASE WITH PILOT AND DEMONSTRATION PROJECTS:** The business case for renewables has been demonstrated, and an increasing number of public transport projects that use renewable energy continue to demonstrate the growing business case of integrating the two. However, in order to build local capacity and showcase the business case to investors and decision makers, pilot or demonstration projects have a role to play. These types of projects help to raise awareness of and confidence in technologies and solutions. Demonstration projects have been shown to promote institutional learning at all levels of government – from the national to local level. This learning can help establish the right regulatory and operational environment needed to scale up local solutions and integrate them with other city transport services, modes or sectors successfully, thereby also increasing chances of citizen support for such projects. It is therefore vital that public transport authorities and operators prioritise securing funding for pilot projects for vehicles and infrastructure (e.g. electrical charging, renewable electricity production, hydrogen).
- 3. CREATE AN ENABLING TAX AND REGULATORY ENVIRONMENT AT ALL LEVELS:** Local and national governments can use policies to support decarbonisation of transport and encourage a greater uptake of renewables across all sectors. This includes providing financial support and low interest loans, mandating the use of renewables or creating tax incentives. Local level actors should also come together to engage national governments on key

regulatory issues – at both the political and technical levels – so that the right enabling frameworks and incentives can be further established and so that inconsistent policies (e.g., inefficient fossil fuel subsidies) are removed. Also important are digital policy frameworks that clarify issues such as data ownership and data security, as Information Communication Technologies (ICT) will play an increasingly important role when it comes to the wider integration of transport and energy solutions. The regulatory framework should also ensure that measures and commitments entrenched in transport policy (supply side, demand management, etc.) meet the overarching goal of climate protection.

4. **LEVERAGE PUBLIC TRANSPORT'S PURCHASING POWER AND DEVELOP NEW BUSINESS MODELS:** While the public transport sector cannot alone influence the national energy mix, its large purchasing power does mean that it can leverage this influence to increase the level of local renewable power generation. This can help to lock in prices and achieve emissions reductions at lower costs. Developing smart charging systems could also bring added financial value to the public transport sector. The sector is also typically a major land and building owner, so it can use its infrastructure and purchasing power to drive the demand for renewables in a city. Agreements such as renewable power purchase agreements (PPAs) have proven to be successful, as well as the leasing of assets (e.g., station and depot roof space) to companies interested in generating renewable power for the sector. These arrangements are increasingly common and can reduce exposure to changes in the wholesale energy market. This adds cost certainty and long-term cost savings can be achieved, while also helping meet climate change targets through developing new renewable power generation projects. New sources of revenue and financing should be explored to support a broad range of integrated public transport and renewable energy projects. Given the significant size of new public transport infrastructure projects, they lay the foundation for integrating renewable energy into other modes of transport, such as private EVs, taxis, car sharing/pooling or electric micro-mobility options. Their immense scale even offers the opportunity to provide a source of renewable power to residential and commercial buildings. This can also create new sources of revenue streams for the sector, but implementing such schemes requires the coordination of different sectors and new actors as well as possibly new sources of finance. National coordination bodies should therefore be established to make this possible. Finally, new innovative financing mechanisms such as Green Bonds should be explored as they are a powerful but underutilised tool at the local level. Carbon markets may offer additional opportunities to mobilise investment.
5. **BUILD CAPACITY AND SKILLS FOR CHANGE:** Greater collaboration, experience, exchange and partnerships with the renewable energy and public transport sector are needed, but also with a wide group of urban transport stakeholders, including the private sector and citizens. Renewable energy solutions in public transport may require a new set of employee skills and technology knowhow. This is especially true as new solutions enter the market. Organisations such as UITP should be leveraged to help both the transport and energy sectors understand the impact of new technologies and provide critical platforms to enlarge opportunities for information and best practice exchange. UITP can also help to enhance the formal training of public transport employees in those areas where skills will be increasingly needed.

(d) How can a just, orderly and equitable transition best reflect the diverse realities of countries at different stages of development and with different degrees of dependence on fossil fuels?

Efficient, affordable public transport improves access to jobs and essential services, ensuring social equity while lowering carbon emissions. Many solutions exist to shift public transport to rely on renewable energy and are ready to be implemented in countries at different stages of development, as reflected in the latest round of NDCs. As such, a just, orderly and equitable transition away from fossil fuels can be accelerated through the connection between renewable energy and the scaling up of public transport in cities and countries around the globe, regardless of their different stages of development.

To ensure that the transition to cleaner mobility is fair and inclusive, restrictions on high-emission private vehicles must be implemented alongside measures that provide accessible, reliable, and affordable public transport as well as other sustainable mobility options, such as cycling infrastructure, pedestrian-friendly streets, and shared mobility services. Without these complementary measures, lower-income households and other vulnerable groups may face disproportionate costs or limited mobility, undermining both the social and environmental objectives of the transition. By improving access to sustainable transport alternatives, policymakers can support a shift away from polluting private vehicles while promoting equity, social inclusion, and economic opportunity across all communities.

Under Article 6 of the Paris Agreement, carbon market mechanisms provide a pathway to support investments in sustainable transport by recognising the mitigation potential of modal shifts - moving trips from high-emission private vehicles to public transport and active mobility options. By crediting the emissions reductions achieved through such shifts, these mechanisms could unlock new sources of finance for public transport infrastructure and services, helping to make them more accessible, reliable, and affordable. This approach is particularly promising for low- and middle-income countries, where constrained public budgets often limit the expansion of sustainable transport, yet the potential for reducing emissions through modal shifts is significant. Linking Article 6 carbon finance mechanisms to sustainable mobility investments can therefore advance climate goals and transition away from fossil fuels while promoting equitable, inclusive access to cleaner transport options.

A quantified global goal for transport can act as a catalyst for this transitioning away from fossil fuels by setting in motion a coordinated shift across the system: expanding inclusive access to low-carbon public transport, reducing the sector's overall energy use, and phasing out fossil fuels through scaling up renewable and zero-emission energy sources. By providing a shared framework to connect and coordinate action across governments and stakeholders, it aligns policy, finance, and implementation while strengthening international cooperation across countries at different stages of development. At the same time, it sends a clear signal to guide investment and climate finance, de-risking low-carbon solutions and enabling countries particularly low- and middle-income economies - to accelerate the shift. Embedded within UNFCCC processes, it translates climate ambition into actionable, measurable pathways for decarbonising transport at scale.

Further reading (including best practices & case studies):

[Policy Brief A Smooth Ride to Renewable-Energy: UITP & REN21](#)

[The Road to Sustainability: Transition to Renewable Energy in Public Transport](#)



About UITP:

UITP is the International Association of Public Transport and a passionate champion of sustainable urban mobility. Established in 1885, we have been sharing insights and experience, inspiring innovation, and shaping the future of urban mobility for more than 140 years.

Today we bring together 2,000 authorities, operators, industry suppliers, academics and policy makers from around the world, and together with these members, we advance public transport through advocacy, knowledge and networking.

<https://www.uitp.org/about>