ESCAP Transport Policy Brief

Building Back Better Passenger Transport in Asian Cities after COVID-19




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MOVING FORWARD TOGETHER

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This policy brief is based on ESCAP reports *Enhancing the Resilience of Urban Transport in Asian Cities after COVID-19: Synthesis of Academic Study Results and General Recommendations* and *Review of Developments in Transport Asia and the Pacific 2021: Towards Sustainable, Inclusive and Resilient Urban Passenger Transport in Asian Cities*. Readers may refer to those reports for further details.

Cover photos: Madan B. Regmi, Selenia and Mohsen Sadeghi

Executive Summary

The COVID-19 pandemic has significantly disrupted passenger transport in Asian cities. It is accelerating the growth of private car and motorbike use and diminishing the viability of public transport as the backbone of sustainable urban development across Asia in the long run. Yet the pandemic also offers opportunities to reconsider transport planning and work towards greater environmental sustainability, social inclusivity and resilience in transport across Asian cities. This policy brief summarises ways in which these goals can be realised. It distinguishes between short-term interventions to be implemented until the pandemic is officially declared over, and longer-term initiatives which will help to achieve those goals in the two subsequent decades. Particular emphasis is placed on combining different kinds of intervention into comprehensive packages, on action across multiple policy domains beyond transport alone, on involving all relevant stakeholders in carefully designed participatory governance processes, and on tailoring the recommendations to local circumstances in a given city. Some of the recommended policy measures are:

- *Restoring public trust in public transport;*
- *Promotion of active travel;*
- *Slowing down private car and motorcycle use;*
- *Scaling up digitalization and electrification of public transport;*
- *Expansion of physical infrastructure for walking, cycling and micro mobility;*
- *Reducing growth of private motorized mobility; and*
- *Integration of transport and land use planning by employing concept of Transit Oriented Design (TOD), 15-minute neighbourhoods and compact urbanization.*

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1. Effects of COVID-19 on urban transport in Asian cities

According to the scientific literature, the COVID-19 pandemic has had multiple impacts on people's everyday travel behaviour.[1] These can be divided into short-term effects during the pandemic and long-term ones that will remain noticeable after the pandemic is official declared over. For both categories, the nature and magnitude of changes in travel behaviour and urban transport systems differ across and within Asian cities. This means that any policy to influence post-pandemic passenger mobility must be carefully tailored to the local context. There are, however, important commonalities in impacts across cities and countries in Asia.

Of all the impacts the pandemic has on urban transport in Asian cities, the threat it poses to public transport requires most attention

1.1 Short-term impacts

The short-term effects have been given much more attention in the scientific literature. Across Asian cities COVID-19 waves and policies mandating people stay at home, closing down all but essential shops and other facilities, and/or restricting public transport services have resulted in:

- A significant drop in out-of-home mobility levels, in part compensated by increased use of remote interactions via information technologies (IT); and
- A shift away from public transport and, to a lesser extent, shared mobility services towards private motorbikes and cars as well as walking and cycling.

The changes differ according to trip purpose (commuting, shopping, etc.) and social groups in the city. The magnitude of most short-term changes has diminished over time. On the one hand, overall mobility levels have typically bounced back substantially after a given wave of infections. Nonetheless, recovery has been weakest in public transport use, which has regularly caused acute financial problems for operators. On the other hand, transport' susceptibility to COVID-19 has diminished over the course of the pandemic: later waves of pandemic, such as those associated with the delta variant, have caused higher infection and mortality levels but had more limited impacts on people's everyday mobility. The highly transmissible omicron variant is causing mobility havoc but seems to have less severe impact on people's health. This is because political and public acceptability of stay-at-home orders and other mobility restrictions (Figure 1) has decreased over time, meaning that relative to the epidemiological threat policies to prevent the virus spreading have become weaker as time went by.

Figure 1: Social distancing measure in Tehran Metro (Photo credit: Mohsen Sadeghi)

1.2 Long-term impacts

Scientists agree that long-term impacts after the pandemic has ended will be most severe for public transport in Asian cities. Public transport use is expected to recover only slowly, with due consequences for financial sustainability of operators and the legitimacy of necessary investments in infrastructure and services in the future.

Long-term impacts on shared mobility services are uncertain but delay in the growth projected before the pandemic is likely. This is in part because many digital platforms have turned towards delivery of meals, parcels and so forth rather than the ferrying of people, and it is unclear how their business models will evolve once the pandemic is over. Structural increases in online activity participation rather than physical travel and in active travel – walking, cycling (Figure 2) and micro-mobility – are positive long-term changes, but the magnitude of likely impacts remains highly uncertain.

Figure 2: Cycle Lane in Shanghai (Photo credit: Yijia Cheng)

It is reasonably clear, however, that long-term impacts of the pandemic will enhance social and spatial inequalities in mobility and accessibility to destinations. The bottom deciles of the income distribution and other vulnerable groups (e.g., the elderly, residents of informal settlements) will be affected most adversely in the long term, because they are more likely to be digitally excluded, have the lowest access to private motorised transport, are most dependent on public transport, and would struggle most with fare increases should these occur.

2. Policy goals and objectives

The pandemic offers unique opportunities to make urban transport in Asian cities more sustainable, inclusive and resilient

The phrase 'Build Back Better' after COVID-19 means different things to different people. Here it is understood as contributing to greater environmental sustainability,

social inclusivity and resilience in passenger transport systems in Asian cities.[2]

A transport system can be considered:

- *Environmentally sustainable* if it produces low levels of air pollution and greenhouse gas emissions that support the implementation of the Paris Agreement and achievement of the Sustainable Development Goals;
- *Social inclusive* if it offers fair and equitable access to different social groups and places in a city, enabling all residents to reach the destinations they value in a convenient, safe, reliable and affordable manner and in ways that guarantee their bodily integrity; and
- *Resilient* if it can resist and absorb the impacts of disturbances caused by external shocks such as extreme weather and pandemics, recover from disturbances quickly if they disrupt service provision, and adapt continuously in light of ever-changing circumstances

If environmental sustainability, social inclusivity and resilience of post-COVID-19 urban transport in Asian cities are the goals that policymaking seeks to achieve, then the following more specific objectives can be achieved:

- Control the expansion of private car and motorbike use, ownership and dependence, all of which have been accelerated by the COVID-19 pandemic;
- Recover and extend the use of public and shared transport, from metro and light rail to bus rapid transit (BRT) and local buses to minibus, rickshaw and bicycle-taxi services; and
- Maintain and increase the use of active travel – walking and the use of (e-)bikes and e-scooters.

Included in the last two objectives are various more specific objectives. These include making all forms of public transport and active travel more convenient, safe and reliable, and ensuring they remain or become affordable for all social groups and places in the city, including the elderly, poor and residents of informal settlements. This is important because being able to reach places across the city is important to people's wellbeing and upward social mobility.

The above objectives amount to system consolidation and transformation. Public transport system should be consolidated and, insofar as possible, extended in a sustainable, inclusive and resilient manner. Given the population growth in most Asian cities and their population densities, there simply is no physical room for the rates of private car ownership seen in countries like the Unite States of America without cities suffering even more from road congestion, pollution and other problems than they already are. This is why system transformation is required: the long-term growth of car use, ownership and dependency must be halted and preferably reversed in the way many cities in the global North are experiencing. A widespread shift towards active travel, shared mobility and public transport is the only way to keep Asia's cities functioning efficiently in the longer term. This transformation is required across the whole urban area. It cannot be limited to central areas only and must also be realised in the outer suburbs and peripheral districts.

3. General policy principles

Policy will be more effective if five development principles are adopted

The realisation of the goals of environmental sustainability, social inclusivity and resilience and more specific objectives will be easier if four principles are adopted in policy development:

- *Policy packaging*: There are no silver bullet measures for any of the above goals and objectives. Smart combinations of measures and interventions that are tailored to local circumstances will be required.
- *Domain integration*: Many transport issues are caused by processes and conditions that are external to transport systems and cannot be addressed meaningfully by intervention in transport systems alone. Policy silos need to be broken down, and a cross-domain approach to policymaking is required. Building back better transport after the pandemic also requires interventions in land use planning, public health, labour market, digital technology, energy and other domains.
- *Multiple time horizons*: Some interventions are easier to realise than others and may generate impacts more quickly too. This means that policymakers need to consider carefully what can and should be done in the short term – between now and shortly after the pandemic is declared over – and in the medium-long term, or the two decades or so after the end of the pandemic. They also need to think about how long the lead times of impacts are.
- *Multi-level governance*: Policy measures will have to designed and implemented in a complex institutional landscape with city authorities normally tied into vertical relationships with regional (provincial, state, etc.) and national level authorities as well as transnational organisations and donor countries, and in horizontal linkages with transport operators, local NGOs and pressure groups as well as citizens in their city. Co-production of policy and extensive stakeholder and public participation will be essential.
- *Monitor, Evaluate and Adapt*: whatever policy intervention is implemented, it will be important to monitor and evaluate effects and effectiveness continuously. If unintended effects are undesirable and considerable, or measures generate few benefits on a reasonable timescale, then interventions will have to be adjusted and/or combined with others.

4. Policy interventions to build back better

This section discusses which actions policymakers at city, regional or national levels can take to realise the above goals and objectives and considering the specified principles. A distinction is made between interventions until shortly after the pandemic and interventions needed in the medium-long term to resort impacts in the two decades or so after the end of the pandemic. Most short-term measures can be continued once the pandemic is over and must be complemented by a much wider set of more-difficult-to implement initiatives with effects that will take longer to become manifest.

4.1 Short-term interventions in public transport

Restoring trust in public transport should be the number one priority. Fare increases will make public transport less inclusive

Restoring public trust in public transport should be policymakers' biggest priority until after the official end of the pandemic. Restoring public trust is essential to encouraging ridership in the near future and, through that, to enhancing the financial sustainability of operations and the legitimacy of future investment and system expansion.

Trust can be restored in various ways, and the best package of interventions will vary across cities and specific forms of public transport (metro, Bus Rapid Transit, minibuses, etc.). The set of possible interventions that generate impacts quickly includes:

- Operating all routes and a full timetable, so that those we need to travel can use a service;
- Encouraging social distancing and facemask wearing by staff and customers;
- Continuing visible hygiene and cleaning practices;
- Extensive ventilation in vehicles, comportments, terminals, etc. and minimise use of air conditioning;
- Positive messaging about public transport in public communication;
- Provision of real-time (digital) information on crowding levels so that users can avoid busy services;
- Enabling digital payment systems; and
- Consolidate and legalise pop-up Bus Raid Transit lanes and services where these have appeared.

It is important to maintain implemented measures until epidemiologists are agreed that the pandemic is over, and not abandon them as soon as infection levels have declined to low levels. Continuation will demonstrate the commitment of operators and the government to keep public transport safe to use.

It is also important to avoid fare increases and rationalise routes. The desire among operators to increase fares is understandable given the revenues they have forgone and the additional costs that extra cleaning and digital payment system instalment incur. However, these will do little to restore public trust and the attractiveness of public transport use. Fare increases will also hit socially vulnerable groups, which are often heavy reliant on public transport, disproportionally and contravene the goal of social inclusivity. A better option than fare increases would be for local or national government to offer extra subsidies or exceptional loans to public transport providers, at least until the end of the pandemic.

4.2 Short-term interventions to promote active travel

Public transport is not the only system where action is desired. The extra demand for active travel should be facilitated and reinforced through institutionalisation of pop-up infrastructures for cycling and walking where they have appeared. If plans for creating safe and convenient infrastructures for active travel existed before the pandemic, these can now be implemented faster and possibly on a larger scale than initially conceived. Where such plans hardly or not at all existed, these can be developed and implemented. This is, for

More and higher-quality infrastructure for active travel is essential but participatory planning and design are important. Widespread training programmes to increase skills and confidence must also be set up and facilitated

instance, what happened in Manila, the Philippines where in 2020-2021 the government implemented a metropolitan-wide network of bicycle lanes (Figure 3) and supported various information programmes about responsible cycling.[3]

Figure 3: A bicycle lane in the Philippines (Photo credit: Martin Jude Suarez)

However, fast-tracking of active travel infrastructure expansion should not result in top-down, command-and-control delivery. To increase the public acceptability and quality of new active travel infrastructure and ensure it satisfies the most pressing needs, extensive public participation in design and implementation of relevant stakeholders in the planning, design and implementation phases is in order. Stakeholders that should be involved include cycling advocacy groups, public transport and taxi sector representatives, local businesses, and resident collectives.

Action to promote active travel, and cycling in particular, should not be limited to infrastructure provision. Training programmes where novices learn to use a bike, e-bike or e-scooter safely and responsible in different traffic situations, ideally provided by certified instructors, should be set up and supported. Inclusivity of these programmes is essential. Training should be tailored to different levels of bodily fitness and capabilities, age groups and genders. It should ideally be free or provided at very low cost to users, to maximise affordability across social groups. Public authorities can also improve the image and connotations of active travel through positive communication in media campaigns.

4.3 Broader short-term actions

Policies for slowing down the growth of private car and motorbike use is as important as encouraging public transport use and facilitating active travel. This can be deeply unpopular among electorally powerful segments of the general public, private sector lobbyists and politicians but is an inevitable part of the mix of interventions to make urban transport more sustainable and inclusive. The most realistic action in the short term is

Divesting finance from road building can fund short-term actions to support public transport and active travel. Digital exclusion must be tackled to allow more people to substitute physical trips with online activity participation

to divest public resources away from capital intensive infrastructure such as road and flyover construction and expansion, and direct it towards supporting public transport operation and active travel infrastructure and training. Public authorities can also help to shift public understandings of the effects of building infrastructure for private vehicles. Targeted information campaigns can explain the pros and cons of building roads, flyovers and parking facilities vis-à-vis developing infrastructure for public transport and active mobility.

Interventions outside the transport domain are also desirable. Transport policymakers should collaborate with urban planning and public health professionals to develop positive public communication to restore public trust in high-density settings and busy public spaces as an indirect way of stimulating demand for public transport. Given that scientific evaluations have demonstrated that some smartphone applications (apps) have helped to reduce agoraphobia and related panic disorders, policymakers should also encourage the development of apps that make people more confident to visit and spend time in busy public spaces, transport terminals and urban developments. Transport policymakers should also work with colleagues in other fields to reduce digital divides and make sure that those groups at greatest risk of digital exclusion (e.g., the elderly) get access to high quality digital technologies and develop the skill and confidence to use these for online activities that can substitute physical trips.

4.4 Longer-term interventions in public transport

Further digitalisation and electrification of public transport should be facilitated and encouraged when the pandemic is declared over. A key aspect of this will be to work towards a Mobility-as-a-Service (MaaS) system in which both (formal) public transport and paratransit services are integrated into a seamless multi-modal and metropolitan-wide structure based on a single digital system for information provision, booking and payment. This will again require a participatory planning and design process, and paratransit operators should be involved as full partners together with other stakeholders. Alongside colleagues from the formal public transport sector, they can help ensure that booking, fare-setting and payment respond to the needs and concerns of the full range of public and shared transport operators.

In the long term, public transport must be integrated with paratransit into one convenient, affordable and inclusive MaaS system. A shift away from efficient hub-and-spoke systems towards greater modularity and flexibility will improve resilience

In the medium term, there will be new opportunities for physical expansion of the public transport system, resulting in additional and upgraded capacity in the form of new and/or more modern vehicles and new routes, stops and lines. Here it will be beneficial to experiment with new system designs with an emphasis on modularity, redundancy and fluidity. Planning and design of (integrated) public transport system can be – and often are – focused on the creation of starkly hierarchical hub-and-spoke networks that maximise throughput and efficiency of service delivery. However, such structures are prone to disruption, especially if one or more high-volume connections between hubs are affected by extreme weather or another disturbance. Public transport systems with more point-to-point connections, smaller vehicles or pods, flexible transfer points and underpinned by real-time digital information provision to users and staff are more resilient because they are usually adapted more easily be adapted to foreseeable and unforeseeable disruptions. In this context public transport authorities and operators can learn a great deal from how ‘informal’ services by minibuses and rickshaws are organised and governed. Such services are beset by numerous problems and should not

be romanticised, but they are often well adapted to functioning in an environment characterised by numerous uncertainties.

Changes to the design of the metropolitan-wide public transport system should be made prudently. Rather than implementing large-scale changes at once, it makes more sense to conduct first a series of smaller-scale experiments involving all relevant stakeholders and accompanied with extensive monitoring, evaluation and collective reflection on outcomes, consequences and objectives. Adaptations based on collective learning can be made from one experiment to the next, before a solid design is rolled out across parts of all of the urban area.

4.5 Longer-term interventions to promote active travel

Given the current state of physical infrastructure for walking, cycling and micro-mobility in most Asian cities, its expansion and upgrading will take many years, if not decades. Training programmes will also have to be provided, adapted and improved on an ongoing basis. Once the pandemic is over, there will be more time to reflect critically on the question which forms of active travel are best suited to temperature, precipitation and humidity levels in Asian cities. These vary enormously between cities and sometimes across seasons in a single city, so interventions will need to be tailored to local conditions. Nonetheless, many cities may want to experiment with options to make active travel acceptable to a wider share of the population. Examples of such options are:

Active travel provision and infrastructure needs to be adapted to local climate. Care must also be taken that they remain socially inclusive

- E-bikes, e-scooters and other micro-mobility forms that require only modest physical exertion;
- Sheltering of dedicated road segments from sun, wind or precipitation using trees or other material structures; and
- Using road surface materials that are heat resilient and maximise drainage.

What initial small-scale experiments reveal to be most appropriate in a given city can then be implemented on a metropolitan-wide scale in that city.

Other issues that will have to be addressed are storage and safe parking, both at in people's home or residential neighbourhood and at the destination end. Provision of shared (e-)bikes, e-scooters, etc. that people can access at designated sites can mitigate some of the issues, but these may not serve all mobility needs, be difficult to afford for some population segments, or be seen as inappropriate for some groups because of cultural norms. Policymakers will have to collaborate with local stakeholders to make active travel modes as attractive and accessible to as many people across the whole urban area as possible.

4.6 Initiatives to slow down growth of private motorised mobility

A comprehensive set of strategies and instruments is required to slow down and reverse the growth of private motorised mobility after the pandemic

When the pandemic is declared over, divestment of resources away from infrastructure for private motorised transport – e.g., roads, flyovers, parking facilities – will remain a powerful way to slow down the growth of private car and motorbike use. However, other interventions to reduce growth of private motorised mobility should also be brought into play.

City authorities have several instruments at their disposal, all of which require careful design and stakeholder participation. They can:

- Change space allocation on existing roads away from private motorised mobility through the exclusive allocation of certain lanes or spaces to public transport and shared taxi services and/or bikes and micro-mobility;
- Restrict the spaces where vehicles and motorbikes can be parked and actively and strictly enforce rules when these are violated;
- Institute zones in the city where some or all motor vehicles are not allowed. Well-known examples include the creation of Clean Air Zones (CAZs), which ban vehicles that emit more air pollution and/or greenhouse gases than a decided threshold, are the most from certain parts of the city, and pedestrianisation of certain areas. CAZs are known to have multiple benefits. They can encourage a shift away from private motorised transport but also stimulate demand for cleaner electric vehicles and motorbikes. The latter effect will be (much) stronger if CAZ creation is accompanied by the creation of public charging infrastructure for electric vehicles, motorbikes and bikes.[4]
- Use economic measures to reduce the attractiveness and growth of private motorised mobility. Instituting charges for parking in public space is an obvious candidate but needs active enforcement. Another option is local taxation on the purchase of new vehicles to take up disproportionate road space, as sports and light utility vehicles (SUVs/LUVs) do in particular, and of new fossil fuel-powered vehicles that generate high air pollution and/or greenhouse gas emissions. City or regional governments may not always have the authority to impose such taxation. At all times, however, they can always lobby national authorities to impose such taxation or more general taxation of road use by motorised vehicles.

Some cities and countries have experimented with policies to restrict vehicle use on the basis of number plate-based rules at particular times or days of the week, but their effectiveness is unclear. Multiple studies have shown, for instance, that Mexico City residents adapted in various ways to a one-day-per-week ban on using their car, with that day depending on their number plate. Examples included buying a second car or moving trips for which they needed to drive their car to days on which they were allowed to do so.

4.7 Cross-domain policy Interventions with long-term effects

Long-term urban development planning has a crucial role to play but low-income and other vulnerable groups in the city must also be able to reap the benefits

The most powerful set of initiatives across policy domains that will help make passenger transport in Asian cities more sustainable, inclusive and resilient is to integrate transport planning with urban development, housing and labour market policy.

Key to this are urban development policies:

- *Transit Oriented Design* (TOD): the planning and realisation of new urban developments at nodes in the public transport network through building in high densities at or around stations and providing a broad mix of land uses in close proximity that can be accessed through active travel;
- *15-minute neighbourhoods*: making sure that residents have all relevant destinations, from employment opportunities to childcare to leisure facilities, within 15 minutes using active travel and/or public transport from their home; and/or compact; and/or

- *Compact urbanisation*: the institution of legal and planning restrictions on new urban areas in open, green and/or blue spaces in and around existing built-up areas and the creation of designated zones within which new urban development is allowed.

These approaches have long lead times and take considerable time to generate clear impacts. Their contribution to achieving environmental sustainability, social inclusivity and resilience in passenger transport will be larger if they are used as a broad framework within which the interventions discussed above are integrated.

It is nonetheless essential that policy ensures that the impacts are distributed equitably across social groups. The risk is that low-income and other vulnerable social groups are displaced from locations with high-quality public transport and active travel infrastructure, and that more privileged population segments benefit disproportionally. Therefore, the above urban development strategies need to be accompanied by strong regulation on:

- The new housing, employment and services that is realised in locations where new development is concentrated: Quota could be instituted to ensure that developers realise a minimum percentage of housing targeted at low-income and otherwise vulnerable groups, and that new developments include a certain share of decent and secure jobs for unskilled workers
- Land values: land value increases are important and their capture can help finance new urban development but rises should be capped using rent controls for dwellings and business premises to prohibit speculative urban development that will make the realisation of genuinely socially diverse and inclusive neighbourhoods impossible.

Endnotes

1. More details available in: Schwanen T (2021) *Enhancing the Resilience of Urban Transport in Asian Cities after COVID-19: Synthesis of Academic Study Results and General Recommendations*. Report prepared for UNESCAP, Bangkok. Available at: https://www.unescap.org/sites/default/d8files/event-documents/Enhancing_the_Resilience_of_Urban_Transport_0.pdf.
2. See also: UNESCAP (2021) Review of Developments in Transport Asia and the Pacific 2021: Towards Sustainable, Inclusive and Resilient Urban Passenger Transport in Asian Cities. Available at: https://www.unescap.org/kp/2021/review-developments-transport-asia-and-pacific-2021
3. See also: Sunio V, Mateo-Babiano I (2021) Pandemics as 'windows of opportunity': Transitioning towards more sustainable and resilient transport systems. *Transport Policy*, in press. DOI: 10.1016/j.tranpol.2021.12.004.
4. This requires careful design and reflection on business models to avoid that most, or all, charging infrastructure ends up in more affluent neighbourhoods and developments and poorer and otherwise vulnerable communities are excluded.
5. See: Davis LW (2008) The effect of driving restrictions on air quality in Mexico City. Journal of Political Economy 116(1), 38-81, DOI: 10.1086/529398; Davis LW (2017) Saturday driving restrictions fail to improve air quality in Mexico City. *Scientific Reports* 7, 41652, DOI: 10.1038/srep41652; Guerra E, Millard-Ball A (2017) Getting around a license-plate ban: behavioral responses to Mexico City's driving restriction. *Transportation Research Part D: Transport and Environment* 55, 113-126, DOI: 10.1016/j.trd.2017.06.027