Latin America's Urban Transport Transformation 2.0

Avenida 9 de Julio in Buenos Aires, a first generation Bus Rapid Transit system © Roel Slootweg

STORIES OF TRANSFORMATIONAL CHANGE

Inspirational examples highlighting transformations towards greater environmental and climate sustainability

Agenda 2030 - Target 11.2 : "Provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons".

Two waves of urban transport innovation[1]

In the second half of last century, highly urbanised Latin America revolutionized the use of Bus Rapid Transit (BRT) systems. The city of Curitiba acted as frontrunner, followed by some 55 cities throughout the continent (see this global list of 100 BRT systems in developing countries). These 55 cities have a total of 1,816 km of BRT corridors, which transport over 20 million passengers every day. The region became a leader in promoting and developing active mobility infrastructure in a developing context. However, BRT's are not a panacea for all urban transport problems and also had unintended negative consequences. The continent is now seeing a second wave of transformation in urban transport providing green innovative inspiration.

The first wave: Bus Rapid Transit systems and Transit Oriented Development

Curitiba (Parana State capital, Brazil) is considered the original model for BRT. An innovative planning approach which led to a system with dedicated bus lanes and concentrated activities along corridors through urban planning. In 1991, it was estimated that BRT had caused a reduction of about 27 million car trips per year. Crucially, the Curitiba experience underlines the importance of combining transport and land use planning within one autonomous planning body with a long-term vision. This is nowadays referred to as Transit Oriented Development (TOD), geared toward pro-active planning of stations and their areas of influence to create favourable conditions for urban development and ridership growth.

Unintended consequences. Although BRT systems provided an enormous improvement of public transport, some of the BRT magic has faded, partly because of unintended consequences, and of inadequate planning.

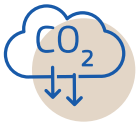
- **Road space allocation** for BRT corridors is a trade-off between space, cost and capacity. The single-lane Curitiba system (but also Quito) uses little space and ultimately became congested, resulting in lowering user satisfaction. Guadalajara (Mexico) decided to entirely cancel its BRT plans and built a more expensive but successful light rail system to connect the less affluent parts of the city to the city centre, simply because there was no space for BRT lanes in the narrow streets.
- **Inclusiveness.** Mass transit corridors successfully concentrated

[1] Case mostly inspired by: M. Moscoso, T. van Laake, & L. Quiñones, Eds. (2019). Sustainable Urban Mobility in Latin America: assessment and recommendations for mobility policies. Despacio: Bogotá, Colombia. Further inspiration is provided by Transformative Urban Mobility Initiative, C40 Cities, a World Bank blog on urban cable cars and several other documents.

"Achieving sustainable transport means putting users first and providing them with more affordable, accessible, healthier and cleaner alternatives to their current mobility habits."

The European Green Deal[2]

© Shutterstock, Cable cars carry passengers in La Paz



350,000 tonnes

of CO2 per year reduced with the introduction of TransMilenio

194,971 people

transported by MiTeleferico in a day has become a symbol of social inclusion

Greener innovative transportation systems are becoming more popular in Latin America.

urban development near transport hubs. This caused an increase in the cost of housing near BRT stops, forcing poor people towards remote, under-connected areas, thus undermining BRT's capacity to provide equitable access to the city.

- **Feeder system and safety.** Accessibility and road safety around BRT stations, the barrier effect of BRT lanes and high concentrations of passengers are often overlooked. Adequate access on foot and feeder services, potentially by bicycles, are problematic.
- **Pollution and negative perception.** Most BRTs are operated by diesel-fuelled buses. Even though per passenger emission is low compared to private cars, inhabitants consider BRT lanes noisy polluters. Car owners oppose bus-lanes as they occupy road space, even though BRT lanes have a much higher transport efficiency.

The second wave: better integrated and green urban transport solutions

The perceived need for cleaner, safer and more inclusive urban transport has created the circumstances for a new wave of innovation in urban transport in Latin America.

Planning for BRT. Bogotá, capital city of Colombia, had about 5 million people commuting by diesel bus every day, having no possibility via metro or trams. It has introduced a high capacity, double lane BRT system. This 114 kilometres TransMilenio network carries some 2.4 million passengers on a given weekday. Carbon emission reductions were estimated at around 350,000 tonnes annually. It has been the first major transport scheme in the world to earn Kyoto carbon credits. Recently, a cable car line was added and stations have bicycle parking facilities. Although Bogotans have found Transmilenio to be an improvement, the system has also been ranked as the "*most dangerous transport for women*"; despite efforts, exclusive buses for women and special undercover policewomen have not solved this widespread problem of violence against women in Latin America yet.

Cable cars as feeders/main system. Cable cars are an attractive urban transport solution where hills or rivers make other modes infeasible. Medellín (Colombia) pioneered the use of cable cars for urban transport when it opened its first "Metrocable" line in 2004. Its 5 lines are designed as a mass transit solution to connect highlands with the main BRT system, to provide equitable access to the urban economic centre. La Paz went a step further by building MiTeleferico, a cable car system with 11 lines, connecting La Paz with 800 m higher El Alto. While Medellin's Metrocable complements existing rapid transit systems, Mi Teleférico is the first system to use cable cars as the backbone of the urban transit network. Apart from being the highest and largest cable car system in the world, MiTeleferico also holds the world record for transporting 194,971 people in a single day and it has become a

[2] European Commission: Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions on The European Green Deal, December 2019, COM(2019) 640 final, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX:52019DC0640

symbol of social inclusion with positive effects on the life of two million inhabitants. Recent cable car projects in Latin America include Rio de Janeiro (suspended after financial trouble), Caracas, Guayaquil, Bogotá, Santo Domingo and more to come.

Electrification: Santiago (Chile) plans to operate 2,000 electric buses with a goal to make 80 percent of public transportation electric by 2022. Its ambition is to become a global leader in green transportation. Bogotá has an ambitious electric vehicle programme aiming to replace thousands of buses with electric and hybrid vehicles. Medellín shifts from diesel to electric buses and electric taxis in 2020. Mexico City is planning to procure 500 electric trolleybuses. Quito is planning for a transition to electric buses in the ECOVIA trunk corridor, and for an extension of the Central Trolleybus Corridor. These are just some examples of many.

Cycling: Bogotá is the birthplace of the Ciclovía where, since 1976, on Sundays and holidays 124 km of avenues are shut for cars in order to facilitate exclusive use by pedestrians and cyclists. Nowadays, many cities in seventeen Latin American countries organise open street days. This immensely successful initiative has given a boost to cycling, and has motivated people to use bicycles beyond the weekend. The present COVID-19 pandemic provides further stimulus to cycling; cities such as Bogotá, Lima, Quito, Santiago and Buenos Aires have closed numerous roads to cars and expanded bike lanes, in an effort to ease crowding on public transport, curb the spread of COVID-19 and maintain safe distancing. Cycling also has wider health benefits too.

- Mexico City is planning to build 600 km of cycling infrastructure in addition to the existing 100 km and extend its bike-sharing system to 10,000 bicycles by 2024.
- Fortaleza, a north-eastern Brazil beachfront city of 2.6 million people, constructed 225 km of cycling infrastructure, and integrated a bike share system with public transport. Road safety elements implemented include a reduced speed limit, narrowing roads for cars, raised pedestrian crossings, and redesigns of intersections. As a result, deaths from traffic collisions were reduced from 14.7 per 100,000 to 9.7 in just five years.
- In Bogotá, less than 1% of trips are made by bicycle. The creation of 550 km of cycling infrastructure increased the share of cycling to over 6% in a decade (880,000 daytrips).
- São Paulo massively expanded its cycling network to a 500 km network (as part of a master plan which also implemented 320 km of exclusive bus lanes). The ambitious master plan has made São Paulo the first megacity to ensure limits to parking spaces available citywide - contrary to many other cityplanners - discouraging the use of vehicles in the city.
- Medellin built 125 km of cycle infrastructure along transport corridors in combination with the creation of green spaces which helped in reducing urban temperatures by more than 2°C. It has a public bicycle programme "EnCicla".
- Santiago de Chile has 175 bike Share Stations with 2,600 bikes, being used by 40,000 cyclists on a daily basis.
- Smaller cities have also been proactive, with Rancagua, Chile, standing out for implementing a network of 56 kilometres of cycling tracks, leading to rapid growth in cycling.

Mobility as a Service (MaaS). Recently ICT solutions are having an impact on mobility. MaaS is based on the idea that urban dwellers do not require a car – rather, they require a service for mobility that suits their specific needs. An example is the Citymapper app, launched in 39 cities across the world, including Mexico City and São Paulo. Experience shows that commuters are willing to leave their car, if a safe, comfortable, fast and reliable shared-ride alternative is available. It also showed that it is possible to improve the quality and increase the coverage of public transit without making massive capital investments. Medellin also has a ridesharing program called "Comparte tu carro" with 171 member institutions.

The green transformation

Latin America shows significant progress in promoting the urban green agenda. For urban mobility, this agenda

Latin American cities have invested in more than 1,600 km of cycling infrastructure and there is more to come.

COVID-19 has exposed stark gaps between rich and poor in cities where half of residents work in the informal sector earning daily cash in hand. "Today the virus is hitting low-income sectors. We understand this as an urgent call for a new transformation" Medellin's mayor Quintero said. The transformation he envisions involves Medellin becoming an "eco-city" that is better connected, greener and more tech-smart. As Colombia's second city of Medellin prepares to revive its economy after the coronavirus pandemic, it simultaneously aims to cut carbon emissions by 20% by 2030, focusing on transport. City officials say they will expand bike lanes by almost 50% within three years and double the number of interconnected public transport lines, including overland trains, trams and cable car lines by 2030. As well, the city is working to provide 50,000 electric bikes that residents can rent cheaply - and it aims to electrify all public transport by the end of the decade.

© Shutterstock, Bike sharing station in Santiago de Chile

Medellin is one of dozens of cities around the world aiming to use a post-lockdown economic restart to simultaneously launch environmental measures. "COVID has been a fundamental factor in achieving what nothing else could have – expanding bike lanes and network length by orders of magnitude instead of slowly and timidly as before", said Carlos Pardo, senior manager at the Washington- based New Urban Mobility Alliance. "Many cities had the stuff in the drawers. The plans are ready, the bike lanes have been identified for years but hadn't been built," "I suspect that many of the temporary bike lanes are going to become permanent. There is momentum."

Urban transport solution has to be adapted to local circumstances. Citizens participation in the design phase of urban transport plans is fundamental.

is nowadays implemented through the "avoid-shift-improve" approach (see Green Mobility QuickTips). It aims at reducing GHG emissions and pollution, but also at creating more high-quality public space, the need for which was made even more evident during the COVID-19.

- Avoid (minimise the need for motorised travel through spatial planning): motorized trips are successfully avoided by creating concentrations of economic activities around public transport hubs connected to population concentrations by an urban transit system providing equitable access (bus, metro, rail, cable car, bike and combinations). The increased land value around these hubs creates an opportunity for "land value capture" as a funding mechanism. Transit oriented development works, even though the problem of safe access for women remains a problem.
- Shift (to low-carbon transport modes): electrification programmes are ongoing and widespread; the shift to more cycling obviously is even more low-carbon. Walkability of cities is an upcoming issue not addressed in this case (for example Niteroi, Brazil).
- Improve: getting people from a private car into public transport is an obvious energy efficiency improvement. The BRT, cable car and cycling programmes successfully pull people from individual motorized transport towards public and active mobility modes. The fact that users complain about crowdedness is a sign of success (and a call for further improvements).

The future of urban transport in Latin America

Improving sustainability and equity in urban transport requires making sustainable modes more attractive ("pull" measures) and discouraging the use of private cars by increasing costs and reducing space dedicated to them ("push" measures). The examples in this case do create equitable public access to the city and provide proof of success of "pull" measures. Pushing cars out of the cities in car-crazy Latin America is still a challenge. In spite of the public transport successes, many decision makers still need to change their mind-set from "moving traffic (i.e. private cars)" to "moving people (by means of public transport)".

A main lesson from all examples is dual and contradictory: inspirational examples are quickly copied by other cities, whether it is the Curitiba BRT system, the Bogotá open street day or the Medellín urban cable cars. Yet, each urban transport solution has to be adapted to local circumstances (such as Guadalajara's choice for light rail due to lack of space). Simply copying or minimal implementation may lead to problems as shown by the issues with BRT systems or the suspension of the Rio cable car. Public participation during the design phase of urban transport plans is fundamentally important and has too often been neglected.

Transit Oriented Development maximizes the benefits of public transit while firmly placing the emphasis on the users—people. It combines thoughtful planning to support, facilitate and prioritize not only the use of transit, but also the most basic modes of transport, walking and cycling. ITDP drafted 8 Principles of Urban Development for Transport in Urban Life to leap-frog into the age of advanced car-free (or low-car) lifestyles; Latin America provides inspirational evidence that it is moving into this direction.

1. [walk] Develop neighbourhoods that promote walking.
2. [cycle] Prioritize non-motorized transport networks
3. [connect] Create dense networks of streets and paths
4. [transit] Locate development near high-quality public transport
5. [mix] Plan for mixed use
6. [densify] Optimize density and transit capacity
7. [compact] Create regions with short commutes
8. [shift] Increase mobility by regulating parking and road use.