

Once regarded as one of the world's most violent places, Medellín is now an award-winning leader in sustainable urban development. With an integrated mobility network that prioritizes connectivity and access, the City of Medellín is proving that sustainable urban transportation can play an instrumental role in revitalizing a city.

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Medellín & ecomobility 'in context'

As recently as the early 1990s, Medellín, the second most populous city in Colombia, was considered one of the most violent places in the world. Nowadays, Medellín is globally recognized as a sustainability leader for how it has utilized transit-oriented urban development and design to transform the city.

The city center of Medellín is situated in the Aburrá Valley, and the more than 2,464,000 inhabitants that live in the city are distributed throughout both the valley and its mountainous hillsides. This distinct topography has played a considerable role in the history of social exclusion within Medellín. As the population of the city has expanded, increased settlement has occurred on its hillsides. These areas – many of which have been settled informally – have historically been poorly connected to the city center with infrastructure, services and public transport.

The integrated mobility network designed by the City of Medellín and implemented in partnership with the publicly-owned Metro de Medellín represents a foundational step in creating a connected, accessible and inclusive city. The network is comprised of a metro, cable car system, bus rapid transit, bus services, public bicycle sharing and other integrated services.

In addition to these various mobility options, a number of infrastructure projects have been carried out using design principles that emphasize convenience and access. These projects, such as the iconic outdoor escalators which connect the once infamously dangerous neighborhood of Comuna 13 to the center of the city, have enabled the municipality to create open public spaces that promote safety and offer newfound opportunities for social interaction.

Creating a livable, ecomobile city requires strategic partnerships with both public and private entities. In addition to collaborating with Metro de Medellín – which was established in 1979 in order to build, operate, and manage large-scale public transportation – the City works in collaboration with the regional government – the Área Metropolitana del Valle de Aburrá. The Agency for Cooperation and Investment for Medellín and Metropolitan Area (ACI) has also been a pivotal actor in the revitalization of the city. Together, the City of Medellín and the ACI are encouraging international cooperation and domestic business development to make Medellín's transport system even more innovative, sustainable and inclusive.



Facts & Figures

Population (2015)

2,464,000

Land area (2015)

380.6 km²

Modal split (2017)

Walking: 26.1%
Bicycling: 0.5%
Public transportation: 29.4%
Personal automobile: 14.7%
Motorcycle: 10.9%
Taxi: 7.4%
Other: 11%



Medellín has been a Member of ICLEI since 2013 and is a participant in the EcoMobility Alliance

Description of activities: Connecting the city

The major initiatives and policies undertaken by the City of Medellín and its strategic partners focus on increasing inclusivity and connectivity by making it easier for people to move throughout the city. The result is an integrated transportation system with a variety of options for end-users (Image 1).

MetroCable

The aerial cable-cars of the MetroCable are the globally recognized icon of Medellín's transportation network. The first MetroCable route – Line K – began operation in 2004 as part of public investment targeted at integrating public transport and improving infrastructure. Following the success of Line K, four additional lines have been added: Lines J and L became operational in 2008 and 2010, and construction on Lines H and M began in 2015.

The MetroCable system reflects a solution for providing public transportation across Medellín's challenging topography. By using a modality typically reserved for tourism - the cable-car - the City is able to connect difficult-to-service neighborhoods with a reliable transportation connection that also provides panoramic views.

Metro

The Medellín Metro began operations in 1995 and has from that point onward been the city's most popular mass transit system. At present, the Metro is composed of two lines (Line A and Line B) comprised of 27 stations that cover 35.5 km and run north-to-south and east-to-west across Medellín. Since it was first established, the Metro has been used for more than 2,000 million trips.

Tram

The City of Medellín tram system, known as the Ayacucho Tram, began full commercial operations in March 2016 following a multi-month trial period. The Ayacucho Tram line consists of nine stations dispersed across 4.3 km of track and is projected to transport about 85,000 passengers per day.



Image 1: With our powers combined! The four cornerstones of the Medellín transit network Source: Metro de Medellín

MetroPlus (Bus Rapid Transit)

The City of Medellín implemented a bus rapid transit system (BRT), known locally as MetroPlus, in December 2011. The MetroPlus system currently consists of two lines and has a total of 28 stations around the city. The system has dedicated lanes to enable rapid transport and provides integrated service with the Metro and MetroCable systems. Buses in the BRT system use natural gas, which reduces the amount of greenhouse gas (GHG) emissions created (relative to other fossil fuels).

Bus service

Medellín has an extensive bus network that is owned and operated by private companies. Owing to the distinct topography and urban pattern of the city, the bus network is comprised of a range of articulated and feeder buses that provide coverage throughout Medellín.

Bicycling and Bicycle Sharing

Between 2009 and 2011, the City of Medellín invested in creating a network of cycling lanes that would become partially integrated with the Metro system. Unfortunately, these cycling lanes were not very well utilized. In response to this challenge, Universidad EAFIT - a university located in Medellín - made a proposal to the City regarding the creation of a public bicycle sharing system. The proposal was approved, and a team from EAFIT designed and implemented a pilot program for the proposed bicycle sharing system.

The pilot program proved to be successful, and a Medellín bicycle sharing system – known as EnCicla – began full operations in 2013, making Medellín the first city in Colombia with a public bicycle sharing system. Medellín presently has a total of 45 km of bicycle lanes, while EnCicla has 1100 bikes and 51 stations strategically placed around the city. EnCicla has been so successful in increasing bicycle ridership that it has also been incorporated into the transportation planning strategy for the greater Medellín metropolitan area.



Image 2: EnCicla bikes in operation on clearly delineated bicycle paths Source: City of Medellín

Traffic management

Traffic congestion and air pollution have emerged as challenges in Medellín, with the problems being particularly acute in the center of the city. To tackle these issues, the City has implemented a number of initiatives and policies aimed at reducing traffic congestion and vehicle idling. These include “no-car days”, dedicated delivery times for logistics vehicles, and a traffic management policy known as ‘Pico y Placa’ (translated to peak and plate). This policy reduces driving during peak periods by restricting license plate numbers on a rotating basis.

Integrated fares

The City of Medellín and Metro de Medellín have implemented an integrated fare system that allows users to utilize a single Civic Card to pay-for and access the integrated transportation system (which includes the MetroCable, Metro, MetroPlus, tram, and various private bus services).

Strategic targets and forthcoming actions

Moving forward, the City of Medellín and Metro de Medellín will look to further integrate the Metro and MetroCable with MetroPlus and the Ayacucho Tram in order to make the public transit network more user-friendly. In addition, the City of Medellín has formulated a number of strategic documents which detail actions and measures to improve urban mobility, increase safety and enhance quality-of-life within the city.

Medellín Development Plan (El Plan de Desarrollo) 2016-2019

The Medellín Development Plan 2016-2019 promotes the use of non-motorized means of transportation through: the development of cycling infrastructure; the promotion of the use of the bicycle as a sustainable mode of transportation; consolidating and establishing walking infrastructure to support pedestrian mobility; and creating an integrated plan for sustainable mobility.

The Plan targets the construction of 80 km of new cycling lanes, maintenance of the existing 45 km of lanes, and the development of 287 bicycle parking stations. The Plan also targets increasing pedestrian welfare and bicycle use in the city and has identified a pilot project to serve as its vanguard initiative. The La Playa Avenue pilot project will see an urban area rehabilitated with urban design that prioritizes bicycling, walkability and safety through the development of 21 new sidewalks and the establishment of speed restrictions on motorized vehicles.

Medellín Secure Mobility Plan 2014-2020 (PMSM)

The PMSM has identified five topics for improving road safety in Medellín. These include: (1) strengthening management and inter-institutional coordination; (2) improving the behavior, habits and conduct of road users; (3) the control and supervision of vehicles and safety equipment; (4) planning, building and maintaining of road safety infrastructure; and (5) providing prompt and professional attention to any person(s) injured on roadways.

Planning beyond the municipal boundary

The City of Medellín also influences strategic planning at the regional level. For example, the Metropolitan Master Plan for Cycling (PMB2030) has set a 2030 target of having 10 per cent of the total trips in the metropolitan area taken by bicycle. To help achieve this target, the Área Metropolitana del Valle de Aburrá will install more than 100 EnCicla stations and a fleet of 3500 bicycles by 2020.

Improving technological standards

Following the example of the natural gas fueled MetroPlus BRT, which has helped to reduce emissions and improve air quality, the City has targeted replacing a number of less environmentally friendly bus models. To support this initiative, the City has reached an agreement with private sector partners in order to expedite the process of replacing any buses that use outdated and environmentally-harmful technology. Through this initiative, the City will look to replace up to 70 per cent of the bus fleet.

Results

The City of Medellín has used sustainable mobility as a way to transform the city and make progress on challenges that may otherwise seem unrelated, such as safety and security. By implementing an integrated mass public transportation system, establishing policies such as Pico y Placa, and trialing initiatives such as 'no-car day', the City has made progress in reducing traffic congestion and air pollution in Medellín.

The integrated public transport system has reduced the average travel time from 90 to 30 minutes. A study conducted by Universidad Autónoma Latinoamericana research group GINVECO in 2011 revealed that "97 per cent of the population of Commune 1 – where the first MetroCable operates – perceive that their quality of life has improved with the system, while 86 per cent state that the system increased the presence of the city's administration and hence, peace". That same perception prevails in the rest of the city, given that the reputation indexes of the Metro have surpassed 92 per cent since the year 2009. Likewise, in the past nine years, users have gained savings in time of 30 hours per week and more than 90 per cent of the users are from strata 1, 2 and 3 – the poorer segments of the population.

The City of Medellín has also established itself as one of the most innovative public actors in the sustainable urban mobility space. Medellín is the first city to use cable-cars as part of an urban mass transit system. The increased mobility provided by the cable-car system, in conjunction with other social and infrastructural investments - including social housing, schools, micro-enterprise, additional lighting in public spaces, pedestrian bridges and street paths – has underpinned decreased crime rates in many areas that previously had high levels of violence.

These various initiatives and policies have brought Medellín international acclaim. In 2012, the Medellín's public transportation system was named one of the top transport systems in the world by the Institute for Transportation and Development Policy (ITDP). Moreover, the innovative approaches toward developing public transportation system was one of the major contributing factors that caused Medellín to be named as 'the most innovative city in the world' by the Wall Street Journal (City of the year, 2013) as well as 'a model for sustainable urban innovation' by the international award Lee Kuan Yew World City Prize in 2016.



Image 3: You'll arrive at your destination on-time with the Medellín Metro service Source: City of Medellín

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Challenges and lessons learned

There are a few challenges that the City needs to deal with in order to improve sustainable urban mobility.

- **Traffic congestion, and the consequential air pollution, can still be addressed by improving the modal split for walking and cycling.** Although the City has launched its public bicycle sharing system and has developed 45 km of cycling lanes, the share of cycling in modal split is low. Although part of this can be due to the topographical characteristics of the city, raising the share of cycling in modal split still remains a challenge.
- **Public-bike sharing is a way of increasing the number of trips made by bicycle.** The EnCicla Public Bicycle System is an integrated alternative that complements the city's mass transportation system and plays a key role in the process of raising awareness and taking ownership of the bicycle as a transportation mean.
- **The efficient and inclusive management in an environment of education and civic culture and clear rules that govern mobility and road safety have made the system a success.** In 1994, the Medellín Metro set out to create a new culture among the people of Aburrá Valley by consolidating relationships of trust with the neighbours of the Metro's stations and lines. The Metro brought big changes, connecting the city from north to south. Nowadays, trips on the Metro last about 30 to 45 minutes, helping the people that used to take two or even three diesel buses and a trip that lasted about two hours to across the city.
- **Daring to do something different has had a positive impact.** Based on a community initiative in 2011, six double stretches of electric stairways were built to connect the neighborhood of "Las Independencias" on the hillside with the Integrated Public Transportation System. The project has become a model of social equity and improved the residents' quality of life.
- **Collaboration has increased the total effectiveness of sustainable mobility interventions.** By working with a range of actors, such as the regional and state government - and by creating an institution for cooperation and investment - Medellín's transport system has become received opportunities for collaboration and expertise that have made it more innovative, sustainable and inclusive.

References and further reading

ICLEI, 2016. EcoMobility Days 2016. Quito Report.

ICLEI, 2017. EcoMobility Alliance Report: 2016-2017.

ICLEI, 2017. The Kaohsiung Strategies for the Future of Urban Mobility.

Kuttler, T., Zimmermann, T., & Otto-Zimmermann, K. (ed.), 2015.
Change the way you move: A central business district goes ecomobile.
(EcoMobility World Festival 2015 Report Book)



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