

# City of Belo Horizonte, Brazil

A safety-first strategy for sustainable mobility



The City of Belo Horizonte's comprehensive PlanMob-BH urban mobility strategy reflects a philosophy that is grounded in practical experience: reducing the vulnerability of pedestrians and bicyclists and providing quality infrastructure and service for ecomobile transport modes can help to change user behavior.

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## Belo Horizonte & ecomobility 'in context'

Belo Horizonte is located in Minas Gerais, the largest state in the mountainous southeastern region of Brazil. Belo Horizonte was one of the first 'planned' cities in Brazil; the structured design of its urban core was built in 1897 to accommodate a projected upper limit of 200,000 inhabitants. Nowadays, the City of Belo Horizonte covers an area of 331 km<sup>2</sup> and is home to over 2.5 million people, making it the sixth largest city in Brazil.

Just as the population of Belo Horizonte has grown, so has its status as a desirable tourist destination. This increase in visitors, combined with the responsibility for providing transportation infrastructure and service to over 2.5 million residents in a city originally designed for 200,000, creates challenges for urban planning and service provision.

The City of Belo Horizonte is addressing these challenges with an acute awareness of how fossil-fuel intensive transportation affects the environment. Accordingly, the City is prioritizing urban development policies that emphasize both quality of life and environmental protection.

Belo Horizonte is recognized as an example of excellent practice for sustainable urban transport as a result of initiatives which make streets pedestrian friendly, the provision of a gold-standard bus rapid transit (BRT) system (MOVE BRT), and infrastructure measures to encourage increased cycling. These initiatives have occurred within a strong strategic planning environment (PlanMob-BH) and have benefited from an agile and responsive institutional structure led by the Belo Horizonte Transport and Traffic Company (BHTRANS).

Despite these successes, the most recent assessment of modal split in Belo Horizonte indicates that there is still room for improvement, particularly in regard to reducing the usage of personal automobiles and increasing the use of public transportation within the city. The modal share for public transportation ridership fell from 57.6 per cent in 2002 to 34.6 per cent, while private automobile use rose from 34 per cent to 48.1 per cent over the same time period.



## Facts & Figures

### Population (2015)

2,503,000

### Land area (2015)

331 km<sup>2</sup>

### Modal split (2014)

Walking: 34.8%  
Bicycling: 0.4%  
Public transportation: 28.1%  
Personal automobile: 31.4%  
Motorcycle: 4%  
Taxi: 1.2%  
Other: 0.1%



Belo Horizonte has been a Member of ICLEI since 1993 and is a participant in the EcoMobility Alliance

## Description of activities

### *Strategic mobility planning in Belo Horizonte*

Between 2002 and 2012, the significant increase in personal automobile usage and decrease in public transport ridership resulted in high levels of traffic congestion and air pollution in Belo Horizonte. The environmental impact of these trends was confirmed by a greenhouse gas (GHG) emissions inventory carried out by the City over 2012-2013, which indicated that urban mobility was responsible for 53 per cent of city-wide emissions. Similarly, an analysis of city-wide energy usage, performed in 2012 using the World Bank developed Tool for Rapid Assessment of City Energy (TRACE), indicated very high energy use per capita in the urban mobility sector. In response to these trends, the City of Belo Horizonte began to develop its sustainable urban mobility plan: PlanMob-BH.

Developed between 2007 and 2010 and formally enacted on 3 September 2013, PlanMob-BH detailed measures to stimulate transit oriented development (TOD) and reverse the trend of increasing personal automobile use in Belo Horizonte. Following the enactment of PlanMob-BH, the City established the Urban Mobility Observatory (ObsMob-BH) as a formal body to monitor the implementation, evaluation, and quadrennial review of PlanMob-BH. ObsMob-BH maintains an open data platform to contribute to enhanced evaluation of PlanMob-BH.

PlanMob-BH focuses on eight strategic interventions: (1) active mobility, (2) collective mobility, (3) motorized individual mobility, (4) traffic calming and circulation, (5) urban logistics, (6) sustainable city, (7) universal accessibility, and (8) management, supervision and operation. Each strategic intervention is complemented by actions and indicators for short (2020), medium (2025) and long-term (2030) planning horizons.

The initial timeline for the completion of PlanMob-BH was 2020; however, the plan underwent a revision in 2017 to incorporate new initiatives, targets and sequential planning horizons (2020, 2025, and 2030). In addition to improving service delivery and infrastructure, PlanMob-BH is structured to ensure that mobility planning in the city has a positive impact on environmental quality, social inclusion, and business development.



Image 1: The scenic Belo Horizonte cityscape, bisected by the 4.3 km Avenida Afonso Pena thoroughfare Source: City of Belo Horizonte

## **The Belo Horizonte Transport and Traffic Company (BHTRANS)**

PlanMob-BH was developed on behalf of the City of Belo Horizonte by the Belo Horizonte Transport and Traffic Company (BHTRANS). BHTRANS is a public company which is administered by the City and is tasked with the organization, planning, and day-to-day operation of the majority of municipal transportation services, roads, traffic, and parking management. BHTRANS is also responsible for the development and adoption of effective plans and policies, the implementation of smart technologies, increasing the share of sustainable modes of transport, and guaranteeing road safety (with a specific emphasis on protecting pedestrians and cyclists).

## **MOVE Bus Rapid Transit (BRT)**

Belo Horizonte launched MOVE BRT [Image 2] on March 2014, several months before the city hosted a considerable influx of tourists for the 2014 World Cup of Football. Development on the project began in 2010, when the City of Belo Horizonte, in collaboration with EMBARQ Brazil (which is part of the EMBARQ network under the World Resources Institute, headquartered in Washington, D.C.), began work on implementing a safe, reliable, and efficient bus rapid transit (BRT) system.

The MOVE system is comprised of three major BRT corridors - Antônio Carlos, Cristiano Machado, and Hipercentro - and it follows best practices in design through the inclusion of center-aligned stations, off-board fare collection and integrated intermodal connections. The system contains a total of almost 23.1 km (14.3 miles) of dedicated lanes, five integrated terminals, 40 transfer stations, and is capable of transporting upwards of 700,000 people each day, making MOVE one of the largest BRT systems in the region.

Currently, the system serves 33 per cent of the daily transport demand in the city. Depending on the departure station, travel time with MOVE is 20-to-50 per cent less compared to private automobiles. The City aims to expand the BRT system further in order to increase the accessibility to the system for more people in Belo Horizonte. The MOVE service also offers services and amenities such as air conditioning, pre-paid boarding and loading capacity for cyclists on weekends and weeknights.



Image 2: Dedicated laneways and terminals make the MOVE BRT an attractive transportation option Source: City of Belo Horizonte

## **Public transportation**

PlanMob-BH has a target of increasing the share of public transportation to 30 per cent by 2025 and to 32 per cent by 2030. In addition to the MOVE BRT service, regular bus transit is another component of the Belo Horizonte public transportation network. Combined with BRT, the Belo Horizonte bus network transports 1.5 million people every day and spans a total length of 2,100 km.

The City launched the Belo Horizonte Metro in 1986. When it opened, the single-track metro line consisted on six stations distributed over 10.8 km. Presently, the metro line consists of 19 stations over 28.1 km of track, with several stations serving as integrated nodes which receive significant bus traffic. More than 230,000 users transit through the Metro in Belo Horizonte every day.

BHTRANS also operates a taxi service of approximately 7000 taxis, with more than 60 equipped to provide service to disabled people. In this context, the taxi service takes on the function of a paratransit/intermediary public transport system, and the taxi fleet becomes a complementary component of the Belo Horizonte urban mobility network.

## **Walking and bicycling**

The City of Belo Horizonte has looked to improve walkability through a variety of interventions. This includes the creation of people-oriented car-free spaces in the city center (Paraná Street), car-free zones on Sundays (as part of project a Rua é Nossa), clearly demarcated pedestrian walkways [Image 3], elimination of parking lots in order to widen sidewalks, and the implementation of traffic calming elements to improve pedestrian safety. The City has targeted increasing the share of walking in the modal split to 38 per cent by 2030.

The favorable weather in Belo Horizonte makes the city ideal for bicycling, which is why the City has targeted the improvement of bicycling infrastructure in order to increase bicycle ridership. Since 2005, more than 89.9 km of new cycle paths and bike lanes have been constructed in the city. Belo Horizonte also launched a public bicycle sharing system, called Bike BH, in 2014. There are presently 400 bicycles distributed across 34 stations in the downtown and six stations in the surrounding Pampulha region. As per PlanMob-BH, the City is determined to increase the cycling modal share from current 0.4 per cent to 2 per cent by 2020 and to 6 per cent by 2030.

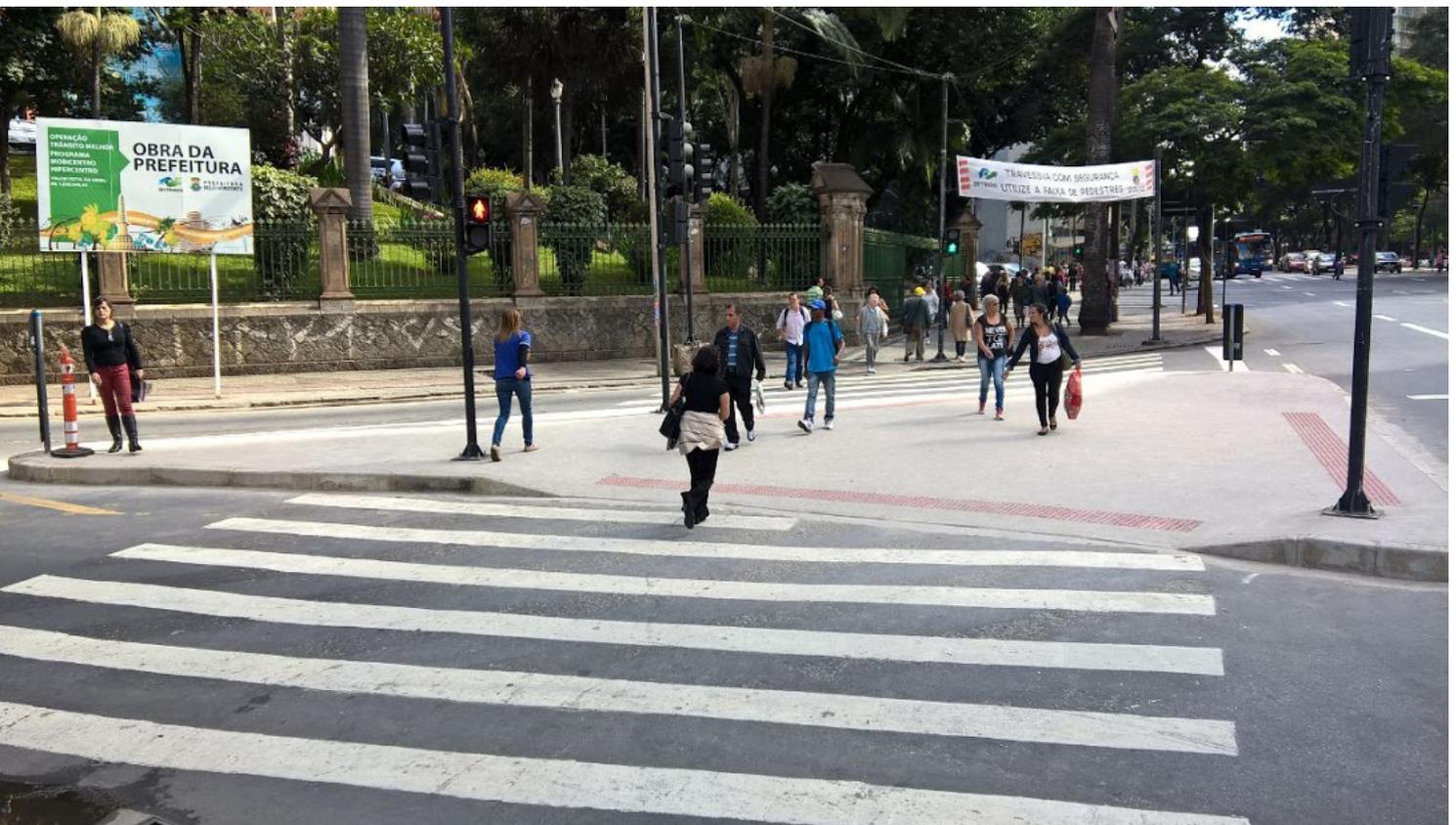


Image 3: Clearly identifiable crossings of a sufficient size are part of the MobiCentro approach to reducing the vulnerability of pedestrians Source: City of Belo Horizonte

## Results

### ***MobiCentro***

Introduced in 2014 in order to reverse the situation of vulnerability of pedestrians and give more fluidity to public transport, MobiCentro consists of a set of coordinated actions and educational campaigns [Image 4] to improve the safety and operational capacity of the road system in the city center. MobiCentro aligns with the PlanMob-BH target of decreasing the share of private-motorized trips to 24 per cent by 2030, as well as reducing the road fatality rate to 377 people per year by 2030 (the rate was 1076 people in 2014).

The project has already seen positive results, including a 41 per cent reduction in carbon dioxide (CO<sub>2</sub>) emissions, 39 per cent reduction in nitrous oxide (NO<sub>x</sub>) emissions, 68 per cent reduction in volatile organic compounds and a 32 per cent reduction in inhalable particles. Through strategic infrastructure and route-planning interventions, MobiCentro has also seen the operational speed of BHTRANS' buses increase from 9 km/h to 17 km/h and regular municipal buses increase from 11 km/h to 21 km/h, resulting in significantly decreased travel times. These interventions have been made without any threat to user safety; in fact, there has been an 18 per cent reduction in traffic accidents. The appeal of faster commute times on public transit has contributed to a 73 per cent increase in the number of people served (140,000 to 243,000) and an 85 per cent increase in the number of bus passengers served (84,000 passengers attended per hour to 155,000 passengers served per hour).

### ***Awards and recognition***

Belo Horizonte, together with Rio de Janeiro and São Paulo, was awarded the 2015 Institute for Transportation and Development Policy (ITDP) Sustainable Transport Award. Belo Horizonte was recognized for its many actions and projects implemented in support of PlanMob-BH, and in particular, the MOVE BRT system, which has received a gold-standard ranking from ITDP. The MobiCentro initiative has been awarded the Inter-American Development Bank's (IDB) 2016 Governarte Prize for its achievements in increasing traffic safety in Belo Horizonte.

### ***Alignment with other strategic plans***

In line with PlanMob-BH, the City has approved and now is implementing an ambitious Municipal Greenhouse Gas Emission Reduction Plan (PREGEE) with the goal of a 20 per cent citywide reduction of GHG emissions by 2030 (against a 2007 baseline). PREGEE is configured as a GHG emissions management plan with several central action areas: urban mobility, energy in buildings, waste treatment and adaptation.



Image 4: BHTANS has launched educational campaigns focused on safety

Source: City of Belo Horizonte

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## Challenges and lessons learned

Despite concerted efforts on behalf of the City of Belo Horizonte and its various partners, the mobility sector remains responsible for more-than-half of GHG emissions in Belo Horizonte and private automobile ownership statistics indicate an average annual increase of ten per cent over the past decade. Effective urban policy at higher levels of government can help to reverse this trend. Brazil's National Urban Mobility Law, which makes sustainable transport a priority, enables municipalities to receive public finance from the national government in order to develop and implement sustainable urban mobility plans and projects.

The City of Belo Horizonte recognizes that reducing emissions and energy use in the transport sector requires attractive options for public transportation, walking and bicycling. In pursuit of this goal, the City has conducted surveys and analysis which indicate the need for two new metro lines in order to provide improved coverage and connectivity, as many existing stations are not located in the proximity of certain high-traffic areas in the city. The planned expansion will see the average daily ridership increase from 230,000 to between 700,000-1.2 million. A project plan is currently in place to have the new lines built by the end of 2018.

To further integrate its public transport system, the City has identified a need to increase the number of intermodal stations which link BRT, bus, and metro. There are currently only six intermodal stations; however, this number will increase significantly with the completion of the metro line expansion.

The other major component of making sustainable urban transport more attractive is improving the safety and design of the network, particularly for cyclists and pedestrians. Much of the success of the award winning interventions implemented by the City of Belo Horizonte is attributed to the fact that the MobiCentro initiative has made reducing pedestrian and bicyclist vulnerability a foundational premise.

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