TOD KP

PD-R03

LAND USE AND TRANSPORTATION INTEGRATION BEST PRACTICES

Examples of land use and transportation integration that influenced significant improvements in cities

Type: Reference Document

TOD
Global Platform for Sustainable Cities
WORLD BANK GROUP
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CURITIBA, BRAZIL

+ PROJECT INFORMATION

Location: Curitiba, Parana, Brazil

Funding: URBS (Govt.)

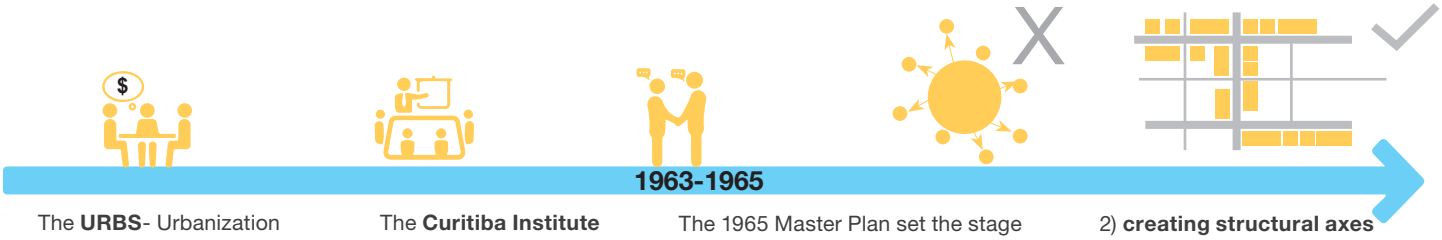
Timeline: 40 Years

Project Settings: Mixed-use (residential/ commercial) main street

Overview:

Curitiba is home to nearly 2 million people. Between 1950-2005, Curitiba's metropolitan area witnessed a sixfold increase in its population- from 300,000 inhabitants in 1950 to 1.9 million in 2005. It is one of Brazil's wealthiest cities and has one of the highest private car-ownership rates in Brazil, yet it averages more transit trips than New York, Rio or Sao Paolo.

PROJECT STORY



The **URBS**- Urbanization of Curitiba was created in 1963 with the purpose of administering the Fund for the Urbanization of Curitiba, to develop infrastructure projects.

The **Curitiba Institute of Research and Urban Planning (IPPUC)** was created on **December 1st, 1965** to execute and develop urban plans.

The 1965 Master Plan set the stage for Curitiba's linear transit-oriented urban form by **1) limiting circular sprawl moving outward from the urban core**, thus decreasing congestion focused downtown; 2) **creating structural axes corridors, lined with high-density mixed-use development** that would taper to lower-density away from the corridors; 3) typical structural corridors in a trinary road system.

+ DESIGN DETAILS

Walkability: Streets with an existing high-level of pedestrian activity have been pedestrianized, along with streets within 400m of the bus corridor, to minimize the need for vehicles.

Flexible planning: Along the structural axes, only the first two floors can extend to property lines. Half of the ground and first floors are mandated to be dedicated to retail uses. Retail-commercial uses at the street level are exempt from FAR calculation.

Compact development: The 'structural axes' concept of high-intensity development has created corridors with high travel demand. Initially, FARs of 6.0 were permitted; later in the 1990s, maximum FARs were lowered to 5.0 for offices and 4.0 for residential. Incentives were given to developers to increase residential density close to the transit corridors.

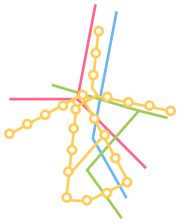
+ APPLICABILITY

Context: Transit for urban areas with high volumes of vehicles

Scale: Corridor | Station Area | Site

Related TOD Principles:

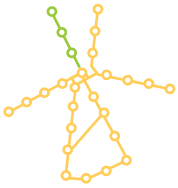
Complete streets, managed parking, bicycle-friendly, architectural diversity



1972- 1992

The first **20km were planned in 1972** and built in 1973 and the first two BRT corridors were **opened in 1974. In 1979, feeder and inter-district buses were integrated with the BRT, creating the Rede Integrada de Transporte (RIT).** Due to the success of the BRT, by 1982, all five BRT corridors were planned and fully functional.

In 1992, **the iconic circular boarding platforms were introduced** along with the **use of biarticulated buses** to increase system capacity.



1992-2009

The new **Green line BRT corridor** was opened.

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MEDELLIN, COLOMBIA

+ PROJECT INFORMATION

Location: Medellin, Antioquia, Colombia

Funding: Municipal Corporation (Govt.)

Timeline: 13 Years

Project Settings: Urban area

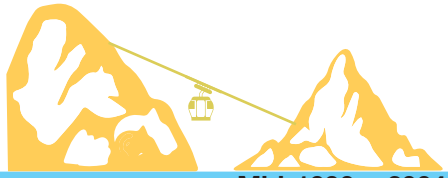
Overview:

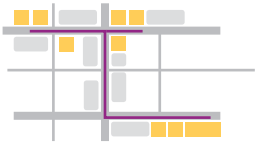
Medellin is the second largest city in Colombia and the capital of Colombia's mountainous Antioquia province. Taking into consideration the large number of commuters from the slopes towards the city, and its own topographical restrictions for development, it came up with an efficient land use and transportation integration plan for the city.

PROJECT STORY

1930s

The cable-car technology was initially used for **exporting coffee from the city of Manizales to the south of Medellin.**





Mid-1990s -2004

When Sergio Fajardo became Mayor of Medellín in 2004, the "Medellín, Commitment of all the Citizens" plan for the city was enacted. One of its fundamental axes was described as **"Social Urbanism." One of the** main guidelines was an Integrated Metropolitan Transport System that must be used as the organizing axis of mobility and projects in the city. **All projects have to be directly linked to the main transport system.**

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+ DESIGN DETAILS

Complete Streets: Existing streets were redesigned to widen sidewalks, reduce automobile lanes and include and strengthen bicycle infrastructure. In hilly parts of the city, walkability was enhanced through escalators.

Seamless Integration of Modes: The transit system in Medellin is comprised of heavy rail, BRT, buses and gondola systems, which are effectively integrated to ensure reach to the farthest corners of the city.

Well Designed Transit Station: The metro-cable stations created plazas underneath the station platform and created pedestrian connections with the surrounding areas to improve connectivity.

Bicycle Friendly: Medellin's bicycle infrastructure focuses on separated bike paths, located within sidewalks. There are also dedicated pelican signals at important intersections.

+ APPLICABILITY

Context: Transit for areas with topographical restrictions

Scale: Corridor | Station Area | Site

Related TOD Principles:

Urban parks and open spaces, public realm

Mid-1990s -2004

The Northeastern Urban Integration Project in Medellín **(Proyecto Urbano Integral, or PUI) was initiated by the City of Medellín in 2004. Working with the community to conceptualize, develop and construct new open-space networks, the designers of the PUI have sensitively integrated mobility infrastructure with the strategic goals of large and socially complex projects, by developing processes that promote ownership by the community.**

2010-2015

Line K was the initial line and was **opened in 2004 and Line J in 2008.** In **2010, Line L was introduced** and was connected to Arvi Park. It is **part of a social project** to cater to the masses. Two additional lines H and M have also been introduced.

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SHENZHEN, CHINA

+ PROJECT INFORMATION

Location: Shenzhen, Guangdong, China

Funding: Municipal Corporation (Govt.)

Timeline: Ongoing

Project Settings: Urban area, suburban ares

Overview:

Shenzhen has become one of the frontier cities that is leading the economic growth of China, as the first of the nation's five Special Economic Zones SEZ (The Economist, 2010). Since the early 2000s, Shenzhen has started to design a new development strategy for the city called the Shenzhen 2030 Urban Development Strategy.

PROJECT STORY

1983

In late 1983, Party Secretary of Shenzhen Mayor Liang Xiang led a team to Singapore to study its mass transit system. Upon returning it was decided that 30 meters on each side of Shennan Avenue should be protected as a green belt and to set aside a 16-meter wide median reserved for a light rail or light metro line.

1984 -1992

In 1984, it was concluded that a light metro system would not sufficient capacity for the growing population and traffic in Shenzhen, as indicated by the Shenzhen Special Economic Zone Master Plan (1985–2000)

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+ DESIGN DETAILS

Compact development: Large-scale construction has been led by the Master Plan (1996-2010) to develop a hierarchical city network. Shenzhen allows the densities for residential and office developments around transit stations to fluctuate within a certain range. This gives Shenzhen's Planning and Land Resources Committee the discretion to change the densities based on context. For example, Bitou Station: Affordable housing—FAR 2.0, schools and residential housing—FAR 3.0, commercial and office developments—FAR 6.0.

Flexible Planning: Shenzhen expanded land development rights, issuing development rights according to land uses on different building floors. This encourages mixed-use development, as commercial, residential and underground transit building rights can be obtained separately.

+ APPLICABILITY

Context: Urban, Suburban, Greenfield

Scale: City | Corridor | Neighbourhood Station

Related TOD Principles:

Architectural variety, housing diversity, walkability

1984 -1992

Alternatively, a heavy rail subway line was proposed along Shennan Avenue. The Central Planning Department approved the Shennan Avenue line in 1992.

1994-1996

Beginning in 1994, the Shenzhen urban rail network master plan was drafted to be incorporated into the Shenzhen City Master Plan (1996–2010). Nine lines of rail defined the visions for the city urban rail network.

1998- present

Phase I (1998-2004)- Line 1 and Line 4

Phase II (2007-2011)- network expanded from 64 km to 177 km.

Phase III (2012-2020)- Lines 6, 7, 8, 9, and 11


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