

Teresina, Brazil

Partner city

Status of the project: Completed pilot project



Basic Information

Urban area: 1,392 km²

Population: 1,203,922 | Growth rate: 1.21%

Region capital city

GDP per capita: USD 6,729

Modal Share:

Formal public transport: 21.3%

Walking: 32.6%

Cycling: 11.8%

Private cars: 24.8%

Private motorbikes or 2-wheelers: 5.8%

National GHG emissions per capita: 5.12 (tCO₂eq)

Exposure to climate change: MEDIUM

Context

Teresina is a low-density agglomeration of 1.2 million inhabitants, located in the north-east of Brazil. The city is located at a crossroads near major cities of the north coast of the country, notably Fortaleza and São Luís, which contributes significantly to its economic development. However, the city suffers from urban sprawl, which increases travel time, costs and reduces the efficiency of public transport.

The 2008 Master Plan for Transport and Urban Mobility states that 1.91 million trips are made per day in the greater Teresina, standing out on foot (32.6%), followed by private car trips (24.8%), and municipal public transport (21.3%), with less representation, bicycle (11.8%) and motorcycles (5.8%). The relatively low share of public transport illustrates existing issues related to efficiency, accessibility and affordability of public transport accessibility but also affordability issues. Public transport in Teresina is currently provided by about 100 bus lines, as well as a BRT system under development. This network is operated by 4 main companies with a total fleet of 550 vehicles. This network is supplemented by 8 alternative service routes, operated by 45 vehicles from minor operators organised under the SINTRAPI (Alternative Passenger Transport Operators Union).

During the last year, the current "conventional" bus system has gradually been replaced by the new Integrated BRT System. This evolution redesigns the bus routes, previously classified into (i) radial, (ii) circular, and (iii) *diametrais* (from one side of the city to the other, going through the city center) all converging to the Central Business District, and leading to overlapping itineraries and a saturation of some segments in the system.

The Integrated BRT System introduces a new feeder-trunk system, operating with a set of feeder lines that connect neighborhoods to zone terminal, and trunk lines (BRT) departing from terminals to city center or linking terminals. It divides the city in 4 main zones (South, Southeast, East, Center-North - Teresina doesn't have West zone inside the municipal jurisdiction), each zone with 2 bus terminals, and the CBD has 4 unloading terminals. The bus route concession was allocated by zone, and each operator holds the concession for the set of routes of a zone.

Teresina Municipality Town Hall, the local counterpart, has the mandate and responsibility to finance mass public transport infrastructure. It has authority to borrow from international finance sources. Systems and procedures are partially in place to monitor, evaluate and report on urban transport.

The project supported by the MobiliseYourCity Partnership implements an Open Innovation approach which aims at (i) identifying the key issues of the transport system management and (ii) developing relevant digital solutions that can address those issues and scale up strategy.

The specific objectives of the Project are to:

- Provide a **rapid assessment of the current public transportation system of Teresina**;
- **Co-identify and prioritise the main issues faced by the public transportation system**;
- **Identify solutions and technologies which could address those prioritised issues, including blockchain**;
- **Provide methodology and resources to prototype pilot projects**;
- **Lesson learned** from the pilots, documentation and definition of the pilot implementation strategy.

The technical assistance contributes to institutional strengthening by tackling trust issues between all the stakeholders of the mobility sector through data and technological solutions.

Support from the Partnership

Technical assistance: Pilot Project development

Funded by: EUROCLIMA+

Funding amount: EUR 500,000

Implemented by: AFD through the project

Local counterpart: Teresina Municipality Town Hall, Secretary of Planning and Coordination (SEMPPLAN)

Supported activities:

- Install the blockchain platform and promote its use by the actors involved in the Teresina transport system.
- Implement a public transport governance system based on co-management and the opening of data and processes whereby the municipality, companies, users and the treasury interact in a collaborative way.

Status of implementation

Project start: 2019 Q4

Project completion: 2022 Q1

Completed outputs:

- Signature of a MoU between Teresina and AFD
- Finalisation Diagnosis
- Finalisation Setup of The Open Innovation
- Finalisation Pilot Conception
- Finalisation Proof of concept
- Scale-up strategy

Core impact indicators baselines

Indicator	Baseline - 2020
Total annual transport related GHG emissions (Mt CO ₂ eq)(Brazil)	1,070.08 Mt CO ₂ eq
Annual transport related GHG emissions per capita (kg CO ₂ eq)(Brazil)	5,120 kg CO ₂ eq / capita
Air pollution Mean urban air pollution of particulate matter (in µg PM2.5) at road-based monitoring stations	13 µg/m ³ of PM2.5
Road safety Annual traffic fatalities in the urban area, per 100,000 inhabitants	22.8 fatalities / 100,000 hab

Insights from practice: key pilot project takeaways

Breaking Down Barriers: How Teresina's Pilot Project Overcame Data Inefficiencies in Transport Management

The pilot project in Teresina aimed to improve the efficiency of the BRT system by implementing an innovative information and interrelationship system. By reducing information asymmetries between stakeholders, decision-making was improved, making it easier to adjust to the interests of each actor. The project successfully tackled the challenges of inefficient data management and analysis, paving the way for more effective traffic reorganisation policies in the future.

The use of this information system is also intended to improve the levels of traffic norms infringement of private companies in terms of fines and infractions committed, in addition to providing better traceability of the process.

Open innovation process allowed for public interest and sharing of data, but political will is lacking to expand solutions

Implementing blockchain technology in the transportation sector is very innovative and became a challenge in the open innovation process, as there were few participants who could integrate it into the solutions. The open innovation process allowed for citizen participation and interest in the management of the transportation system, and internally, the municipality had to coordinate to share data and public information. As a result, the information has been shared publicly in a website: observatorio.stardust.dev.br. However, the lack of political interest from the high officers and the remaining basic challenges of the public transport system, did not allow for systemic change.

Results and perspectives for scaling

Scaling-up strategy developed from the outset connects to potential funding for the city

The scaling up of Teresina's pilot project was included from the beginning. Solutions developed in the Open Innovation process were structured in a strategy to be implemented by the city and to be included as part of a potential funding for expansion of the Proof of Concept, through the AFD Project "Teresina 2030".