#FOR A SUSTAINABLE FUTURE

BNDES + URBAN MOBILITY

BNDES

WHY SHOULD A DEVELOPMENT BANK SUPPORT THE URBAN MOBILITY SECTOR?

Urban life has numerous attractions: employment opportunities, availability of services, cultural diversity, among others. Therefore, an increasing number of people live in large cities. According to the United Nations (UN),[1] in 2000, there were 371 cities in the world with at least one million inhabitants. In 2018, this number grew to 548 (22 in Brazil), and the forecast for 2030 is that there will be 706 cities with one million or more inhabitants.

Urban agglomerations imply the need for more dislocations. A car-centric transport system can result in congested streets, increasing travel costs and the number of accidents, as well as contributing to high levels of noise and air pollution and additional greenhouse gas emissions. The fact that it is an activity with diffuse externalities, inserted in a complex urban environment, makes the public authorities a natural actor in this sector.

Urban mobility is often associated with large projects and complex problems. Thus, it demands different solutions, whether complementary or otherwise, such as taxation, regulation and investment. Development banks (DB) generally have investment as the main line of action, but can also coordinate other actors to enable solutions in the area. Municipalities can benefit from the experience of these banks in the structuring of projects, for example. Furthermore, DBs can condition their support to the adoption of environmentally sustainable solutions and to the use of new technologies, or even finance research and development projects, encouraging innovation in the area.

MAIN GOALS OF THE BNDES IN SUPPORTING THIS SECTOR

In its position as the largest financier of long-term investments in the Brazilian economy, the BNDES offers credit for investments in high and medium capacity urban mobility projects (notably, subways, urban trains, and bus rapid transit – BRT). The strategic guidelines that conduct the BNDES's support to this sector are: (i) reduction of the investment gap (volume required *versus* investments made); (ii) promotion of the use of clean energy sources;[2] and (iii) improvement of the capacity of public managers. In projects for the deployment or expansion of urban transport systems, the specific objectives have been to expand high and medium capacity infrastructure and increase the quality of urban mobility.

Investing in the expansion and improvement of urban mobility infrastructure translates into benefits in the three dimensions of sustainability: economic, social and environmental. By allowing for a reduction in travel time, urban mobility projects provide greater access – especially in peripheral regions – to employment opportunities and basic services, as well as welfare gains. Investments in subways, trains and BRTs also contribute to the reduction of traffic accidents, one of the targets of the Sustainable Development Goal (SDG) 3.

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1 UNITED NATIONS. Department of Economic and Social Affairs, Population Division (2018). The World's Cities in 2018 – Data Booklet (ST/ESA/ SER.A/417). Available at: https://www.un.org/en/events/citiesday/assets/pdf/the_worlds_cities_in_2018_data_booklet.pdf.

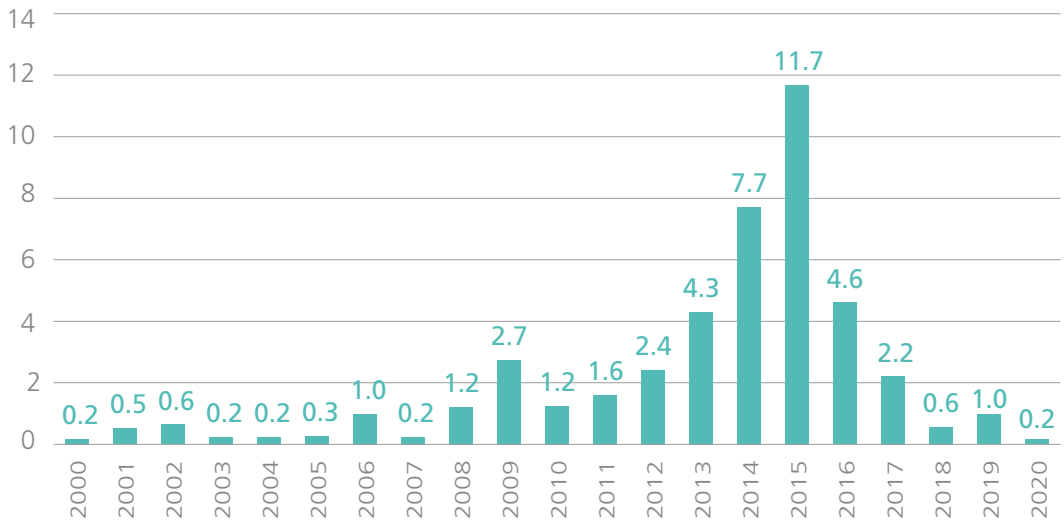
2 Most of the BNDES's support for the urban mobility sector is for clean, electrically propelled means of transport, such as subways, urban trains, monorails and light rail transit (LRT). Recent technologies such as battery electric buses have also been encouraged by the BNDES with more attractive financial conditions.

In relation to the environmental effects, urban mobility projects are of great importance for the achievement of concrete results towards the low carbon economy and for the fulfillment of the responsibilities undertook by the country in the Paris Agreement (formalized in its Nationally Determined Contribution – NDC), since transport activities in Brazil are responsible for 13% of the net CO_2 emissions in the country. More specifically, it is worth mentioning that individual motorized transport holds a 77% share in the total emissions of passenger transport and that each car passenger occupies almost eight times more space on public roads than a bus passenger.[3] The mandatory adoption of ethanol in the gasoline marketed in Brazil, a national policy consolidated for years, contributes positively to making the transport matrix cleaner[4] with the BNDES as an important partner of this agenda, acting as a relevant funder of the ethanol production.[5]

THE BNDES'S SUPPORT TO THE SECTOR IN THE 21ST CENTURY

From 2000 to 2020, the BNDES disbursed more than BRL 30.5 billion (at August 2021 prices) for projects in the urban mobility sector. The evolution of disbursements in this period is shown in the chart below.[6]

THE BNDES'S DISBURSEMENTS FOR URBAN MOBILITY (BRL BILLION)



Data at August 2021 prices. Source: BNDES and IBGE.

3 Source: Base document to support structured dialogues on developing a strategy for implementing and financing Brazil's NDC to the Paris Agreement. Available at: https://antigo.mma.gov.br/images/arquivo/80051/NDC/documento_base_ndc_2_2017.pdf

4 It should be noted that the average CO_2 emission by ethanol-based vehicles is around 22% lower per kilometer traveled than those of the vehicles that use Gasoline C as a fuel. Gasoline C, a specification marketed in Brazil, already contains the addition of 27% ethanol in its composition. Source: ANFAVEA (2021). Available at: https://anfavea.com.br/docs/APRESENTA%C3%87%C3%83O_ANFAVEA_E_BCG.pdf

5 See the publication *#For a sustainable future: BNDES + renewable energies*. Available at: www.bndes.gov.br/blogdodesenvolvimento.

6 The years ranging from 2013 to 2016 were characterized by a higher volume of disbursements for the sector. The investment cycle in this period was associated with the holding of two sporting events: the 2014 Soccer World Cup and the 2016 Olympic Games.

INDICATORS OF EFFECTIVENESS IN THE BNDES'S SUPPORT TO THE SECTOR

The BNDES's administration recently reinforced the importance of supporting urban mobility infrastructure, with the 2020-2022 Triennial Plan including the monitoring of demand met by new medium and high capacity urban transport systems, measured by the number of users per business day.

Between 2015 (the year in which the Paris Agreement was signed at COP 21) and 2020, the BNDES approved support for four projects in the sector, namely: the implementation of the LRT and the expansion of the BRT, both in Rio de Janeiro (RJ), the expansion of the BRT in Sorocaba (SP), and the expansion of the subway in Salvador (BA). Combined, these projects aimed to serve 1.96 million users per day.[7]

CALCULATION OF AVOIDED EMISSIONS THROUGH SUPPORTED PROJECTS

An important indicator of the environmental impact of urban mobility projects concerns the tons of carbon dioxide equivalent avoided, that is, the amount no longer released into the atmosphere due to the implementation of projects that emit less than their alternatives.

URBAN MOBILITY PROJECTS APPROVED BY THE BNDES BETWEEN 2015 AND 2020

Segment	Number of projects	Avoided emissions (tCO_2e)	Km² of equivalent trees	Days of automobile emissions in São Paulo (SP)
Urban mobility	4	3,519,369	213.3	485

As can be seen in the table above, the estimates indicate that about 3.5 million tons of equivalent CO_2 will no longer be emitted into the atmosphere during the useful life of the urban mobility projects approved by the BNDES between 2015 and 2020.[8] To get an idea of the relevance of this number, it is equivalent to the carbon sequestration from a planted area of 213 km² of trees (or around 26,000 soccer fields) or 485 days of emissions from the automobile fleet of São Paulo (SP), the largest city in Brazil.[9]

7 It is worth mentioning that the number of potentially impacted people is much higher than the number of daily users. The metropolitan region (MR) of Rio de Janeiro has 12.6 million inhabitants, the MR of Salvador, 3.9 million, and the MR of Sorocaba has 2.1 million (IBGE, 2019). Thus, the four projects mentioned have an impact, to a greater or lesser extent, on the lives of 18.6 million people.

8 The most recent urban mobility projects supported by the BNDES already have the individualized calculation of avoided emissions. The operational teams use the Climate Fund Program's Greenhouse Gas (GHG) Reduction Calculation Tool, available for download here. For the calculation of the avoided emissions of the projects that did not have individualized estimates, the Climate Fund tool was also used.

9 It was considered that a football field has, on average, an area 8,250 m² and that, on a typical day in 2015, the São Paulo car fleet emitted 7,253 tons of carbon dioxide equivalent in GHG emissions (based on the Institute of Energy and Environment's Inventory of Atmospheric Emissions for Road Passenger Transport in the Municipality of São Paulo, available at: http://energiaeambiente.org.br/produto/inventario-de-emissoes-atmosfericas-do-transporte-rodoviario-de-passageiros-no-municipio-de-sao-paulo).

EVALUATION OF THE EFFECTIVENESS OF URBAN MOBILITY PROJECTS IN RIO DE JANEIRO

In addition to contributing to avoid greenhouse gas emissions, investments in urban mobility can have important socioeconomic effects. The Pontifical Catholic University of Rio de Janeiro (PUC-Rio) was hired by the BNDES to carry out an assessment of the socioeconomic impacts of nine urban mobility projects financed by the Bank in Rio de Janeiro. Using the difference-in-differences method, the following impacts on the surroundings of transport stations were estimated: reduction in the concentration of total suspended particles (up to 3%); reduction of hospital admissions associated with accidents (0.3%), hypertension (0.17%) and cerebrovascular diseases (0.04%); increase in the number of companies (1.5%) and jobs (2%), especially in the service sector. In the evaluation by simulation, the results showed an important reduction in the travel time by public transport in the metropolitan region of Rio de Janeiro (up to 22%), in addition to an increase in the well-being of workers, especially those with higher education. The impact evaluation is available here.

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