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PUBLIC-PRIVATE PARTNERSHIPS BRIEFS

# Brazil: Municipal Energy Efficiency



## Overview

The World Bank Group partnered with the cities of Rio de Janeiro and Belo Horizonte to support their long-term strategies to build low-carbon cities, conducting a study in each city to examine the viability of investments in energy efficiency in the public street lighting sector. These studies looked at the existing institutional and regulatory arrangements and identified opportunities for both public and private investments for the modernization of public street lighting. As a result of this work, both Rio de Janeiro and Belo Horizonte have decided to proceed with implementing energy efficiency projects on a public-private partnership basis.

This series showcases how the World Bank Group supports the development and implementation of public-private partnerships. This support comes in the form of public sector loans, private sector finance, sector and transaction advice, guarantees, and output-based aid.

## Background

Street lighting represents about 3 percent of world electricity consumption, an amount equivalent to the total electricity consumption of Germany. According to Eletrobás, Brazil has more than 15 million public lighting points, representing approximately 4 percent of the country's electricity consumption. Public lighting electricity consumption ranges from 10 to 40 percent of municipal energy expenditure, and therefore energy efficiency in public lighting presents significant opportunities for operational and energy savings.

In January 2011, the city of Rio de Janeiro passed the Municipal Law on Climate Change and Sustainable Development, which sets greenhouse gas (GHG) reduction targets of 8 percent, 16 percent, and 20 percent for the years 2012, 2016, and 2020, respectively, compared to 2005. Belo Horizonte will make efforts to meet its municipal low-carbon efficiency commitments.

## Project Description

The city of Rio de Janeiro has been working with the World Bank to develop a Low Carbon City Development Program to help meet its mitigation targets. Specifically, the city has used the World Bank ESMAP's Tool for Rapid Assessment of City Energy (TRACE) to conduct a high level energy audit of six city activities: public lighting, public buildings, solid waste, water and wastewater, transportation, and power. The findings indicate that investments in energy efficiency in the public lighting and public buildings sectors could allow the municipal government to realize significant operational, energy and GHG savings—close to 1,000 ktCO<sub>2</sub>e over ten years by implementing a city-wide LED street lighting program, and 500 ktCO<sub>2</sub>e over a 10-year period by implementing a municipal building energy efficiency retrofit program.

The city of Belo Horizonte is using the World Bank's City Energy Efficient Transformation Initiative

(CEETI) assistance to implement a public lighting PPP. Belo Horizonte recently completed a public lighting pre-feasibility study that confirmed that the city could reduce energy consumption by up to 60 percent by implementing LED lighting programs.

## World Bank Group Role

The World Bank Group, sponsored and supported by PPIAF and the ESMAP, prepared studies for the Municipalities of Rio de Janeiro and Belo Horizonte. The studies provided an in-depth analysis of the current institutional structure for the implementation and financing of street lighting. In addition to the recommendations for financing structures that achieve scale, the World Bank Group's findings are also expected to inform policy interventions that facilitate bundling and financing of municipal energy efficiency projects, and lead to sub-sovereign transactions which may be supported by IFC or by the World Bank.

## Outcomes

- The city of Rio de Janeiro is considering a PPP in public lighting, using LEDs. Riolut, a city-owned company in charge of street lighting, is developing a plan to establish a PPP for installation and maintenance of 60,000 points of light out of the 420,000 total points in the city.
- Belo Horizonte has asked for World Bank Group assistance to develop a PPP for city-wide LED public lighting.
- An additional ESMAP grant of \$1 million is now expanding the studies to identify issues and options for a larger number of cities in Brazil.

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