

# Energy Efficiency Opportunities in Belo Horizonte



Use of the Tool for Rapid Assessment of  
City Energy (TRACE) in Belo Horizonte



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BELO HORIZONTE

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## A Sustainable City in Brazil

**T**he city of Belo Horizonte, Brazil, has taken a number of steps to demonstrate its commitment to sustainability and efficient use of energy. In 2009, the city conducted a greenhouse gas inventory, which is now being updated and used to create a Greenhouse Gas Reduction Plan. Belo Horizonte has also created a Sustainable Buildings Certification Program, switched all public lighting to efficient sodium vapor lighting, and changed all traffic lights to safer, more efficient LED lights. The utility responsible for public cleaning services, waste collection, and treatment generates electricity using biogas from the landfills. The water utility also generates electricity by using biogas from the wastewater treatment process. The local power utility invests the equivalent of US\$28 million towards energy efficiency each year.

As part of its commitment to sustainability, Belo Horizonte has partnered with the World Bank and the Energy Sector Management Assistance Program (ESMAP) to use the Tool for Rapid Assessment of City Energy (TRACE), a strategic tool for municipal energy efficiency planning. Belo Horizonte is the first city in Latin America to implement TRACE.

### TRACE

TRACE is a decision-support tool designed to help cities quickly identify energy efficiency opportunities. TRACE assesses six sectors—transportation, public lighting, buildings, power and heat, waste, and water and wastewater—to identify energy efficiency opportunities. The tool was developed by ESMAP, a global knowledge and technical assistance program administered by the World Bank. The tool includes an energy benchmarking module that compares a city with peer cities, a sector prioritization module that ranks the sectors with the greatest energy efficiency potential, and a recommendations module that provides specific energy efficiency interventions. It has been used to date in cities in 14 countries in Eastern Europe and Asia.

The use of TRACE generated a number of important recommendations for Belo Horizonte, some of which are described below. More importantly, the tool facilitated a discussion across service sectors, highlighted potential budget and energy savings, and provided expected results of key actions for Belo Horizonte.

**FIGURE 1 | Total Transportation Energy Use Per Capita (MJ/capita)**



## KEY RECOMMENDATIONS

**POWER AND HEAT |** Belo Horizonte's power sector has exceptional performance as its technical and commercial losses are among the lowest in the world. The local utility is already implementing key TRACE recommendations.

**TRANSPORT |** The city has substantial plans and investments underway in the urban mobility sector. Integrating the different plans and projects to facilitate a better use of different transport modes and infrastructure, with measures like traffic flow optimization, would greatly improve mobility and energy efficiency.

**BUILDINGS |** A centralized unit with a mandate, including implementing energy efficiency measures, is needed to take advantage of the substantial energy savings inherent in the public building sector.

**PUBLIC LIGHTING |** Measuring public lighting electricity consumption and installing dimmers (which bring light levels to national standards during hours when many streets are deserted), would help reduce expenditures and provide the incentives needed to make the system more efficient.

**WATER AND WASTEWATER |** The percentage of water lost to leakage and theft is significant. An active leak detection system would help reduce waste, especially when water has to be pumped from a significant distance.

**SOLID WASTE |** The municipality spends a significant amount of resources to transport waste to landfills. Optimizing the flow of garbage trucks would greatly reduce energy consumption.



**For more information**

**Belo Horizonte Municipality** | <http://portalpbh.pbh.gov.br/pbh/>

**Tool for Rapid Assessment of City Energy** | [www.esmap.org/esmap/TRACE](http://www.esmap.org/esmap/TRACE)

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**The Energy Sector Management Assistance Program (ESMAP) is a global knowledge and technical assistance program administered by the World Bank. It provides analytical and advisory services to low- and middle-income countries to increase their know-how and institutional capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth. ESMAP is funded by Australia, Austria, Denmark, Finland, France, Germany, Iceland, Lithuania, the Netherlands, Norway, Sweden, and the United Kingdom, as well as the World Bank.**



Energy Sector Management Assistance Program

The World Bank

1818 H Street, NW

Washington, DC 20433 USA

email: [esmap@worldbank.org](mailto:esmap@worldbank.org)

web: [www.esmap.org](http://www.esmap.org)