

FEATURE STORY

Improving Energy Efficiency in Street Lighting in Brazilian Cities

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Cities consume over two thirds of the world’s energy and account for more than 70% of global carbon dioxide emissions. In addition, many are also vulnerable to climate change. The development community is placing an increased focus on the need to scale up current dispersed efforts to curb city-based GHG emissions on a transformational scale. This must be done in a way that emphasizes growth, job creation, improved access, quality of services, and livability, in the quest for reducing poverty and creating shared prosperity. Investments in energy efficiency represent an important and significant opportunity for cities to promote economic growth, while at the same time reducing GHG emissions.

Municipal Sector Can Play Key Role in Market Transformation

There is an important role for municipal involvement in energy efficiency and market transformation. The municipal sector can assert leadership and contribute to local market transformation through the promotion and endorsement of energy efficiency policies, goods and services, targeted to the public and private sectors. In Brazil, roughly 84 percent of its population lives in urban centers, and 90 percent of GDP is generated in cities. In 2005, Brazilian cities accounted for roughly one-third of national GHG emissions. According to estimates by the UN Population Division for Brazil, the entire growth in population that is expected over the next three decades will be in cities, where the national urbanization rate is expected to rise to over 90 percent. This will add about 63 million people to Brazilian cities, and total urban population will be over 200 million. Thus, although cities are not currently the largest contributors to GHG emissions in Brazil, at the national level, cities are the fastest growing source.

PPIAF Study Identifies Enormous Opportunity for Energy Efficient Investments

In this context, PPIAF, in partnership with The World Bank and The Energy Sector Management Assistance Program (ESMAP), recently undertook a viability study for investments in energy efficiency in the public street lighting sector of Rio de Janeiro and Belo Horizonte. These studies looked at the existing institutional and regulatory arrangements for the public street lighting sector in Brazil. The study identified enormous opportunity for investment in energy efficient public street lighting in Brazilian cities, consistent with current global trends. The study also revealed a number of systemic changes happening in the policy and market landscape in the Brazilian public street lighting sector making it particularly attractive for energy efficiency investments.

The viability study provided an in-depth analysis of the current institutional structure for the implementation and financing of street lighting in the two cities. It identified the key players that are currently involved in the management of the energy use of municipal street lighting and other key players that need to be involved: such as municipal government, street lighting company, secretaries, utilities, luminaire suppliers, installation and maintenance company, etc. The study also identified the economic and financial incentives of the key players, such as who pays the electricity bills, how electricity bills are calculated, who captures the savings from the energy efficient projects, and which players stand to gain or lose the most from the implementation of energy efficient the program.

Study Recommends Private Sector Participation for Investment in LED Street Lighting

Thus, the study recommended taking forward the LED street lighting programs through public-private arrangements. And there appears to be strong institutional capacity, domestic financial intermediaries and private sector interest in managing and financing street lighting projects in Brazil. One of the possible financial schemes is the establishment of a [Special Purpose Vehicle](#) (SPV) project company that would issue bonds to finance upfront LED investment. The overall interest for securities backed by EE projects is yet to be tested with local investors, however, a preliminary market read with local players indicates that [bond](#) issuance and the establishment of securitization vehicles such as “FIDC” to bundle street lighting projects in multiple municipalities are likely to be the instruments with best acceptance rate. A key finding from this study, and one of the reasons that make private sector participation viable was that municipalities are allowed to pay for the cost of public street lighting through the collection of a special levy on end-user electricity bills. This revenue stream generally provides municipalities with sufficient resources to carry out their basic responsibilities related to street lighting systems (operation, maintenance and small-scale expansion), but is not sufficient to fund large, up-front investments in system upgrades, such as transitioning to LED technology. However, the fact that funding for public street lighting has a dedicated revenue stream creates a framework conducive for private sector participation in investments in LED-based street lighting systems.

PPP Projects Yield Important Benefits

PPIAF, The World Bank Group and other partners will continue to support the governments of Brazilian municipalities in the implementation of energy efficiency projects. Investment in new LED technology offers opportunity to improve street lighting efficiency, reduce energy consumption and result in significant budgetary savings and GHG emissions reductions. Some added and important benefits of these types of projects are that better-lit streets discourage crime, thus increasing the sense of safety and improved visibility. These could potentially expand opportunities for women, make delivery of essential social services easier, and generally improve productivity and welfare. PPIAF, The World Bank Group and other partners will continue to support the government of Brazil in the implementation of these proposed projects. Some added and important benefits of these types of projects are that better-lit streets discourage crime, thus increasing the sense of safety and improved visibility. These could potentially lead to improve productivity that comes with additional working hours.

Related Activities

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