06

ENERGY EFFICIENCY IN STREET LIGHTING SECTOR: RAJKOT

Project Highlights

- Rajkot Municipal Corporation (RMC) was the first local body in the State of Gujarat to successfully retrofit all existing conventional street lights with energy efficient Light Emitting Diode (LED) lights within 3 months
- Energy Saving Company (ESCO) model has been applied to undertake this intervention
- Energy savings of 60% and GHG emission reduction of about 7,000 tCO_2 eq. from the street lighting sector was achieved
- Improvement in the illumination levels, aesthetic appearance, enhanced public safety and security, and providing better livelihood to citizens

Background

In 2016, Rajkot had more than 60,000 streetlights within its city limits which were owned and maintained by the Rajkot Municipal Corporation (RMC). The city had prepared a GHG inventory under the urban LEDs project, where street-lighting sector was identified as the energy intensive municipal sector in the city. Therefore, street lighting service was prioritized to cut down the energy consumption and GHG emissions. After assessing the conditions on ground and identifying the gaps in street lighting, Rajkot city government with ICLEI South Asia's support identified that the replacement of existing HPSV street lights with LED lights was a solution to serve multiple objectives, such as - a) improved operation and maintenance management of the technology, b) energy saving benefits, c) reduced GHG emissions and d) improvements in illumination levels. The city thus, decided to undertake a pilot project on LED retrofits to demonstrate the technology and impacts in the local context.

Rajkot, Gujarat

October, 2016 – April, 2017

(Not to scale)

Project Objectives

I. Retrofitting the existing conventional street lighting system with LED lights to ensure energy savings
II. Reduction of 50% of energy consumption and related and related GHG emissions from street lighting sector without any upfront capital investment from Rajkot Municipal Corporation
III. Achieve desired illumination levels in a uniform manner in order to reduce road accidents
IV. Produce environmental benefits in terms of reducing the carbon footprints

Key Stakeholders

Rajkot Municipal Corporation, ICLEI South Asia, European Commission

Approach of LED Street Lighting Initiative

The project has been initiated under the Smart Cities Mission and bidding has been undertaken in order to undertake the project. The following steps were undertaken under the project:

- An on-ground survey was initiated by the city under the Urban-LEDS project to provide stakeholders with an enhanced understanding of the current conditions of the street lighting system in the city and the opportunities for improvements

- Through the development assistance available under the Urban-LEDS project, 291 existing HPSV lights were replaced with LED lights on a selected road stretch in the city
- Based on the successful implementation and positive results from this pilot intervention, the city government scaled up through a city-wide LED streetlight retrofit program
- Rajkot signed the agreement with EESL in December 2016 and within 3 months all poles of the city were retrofitted with LED lights

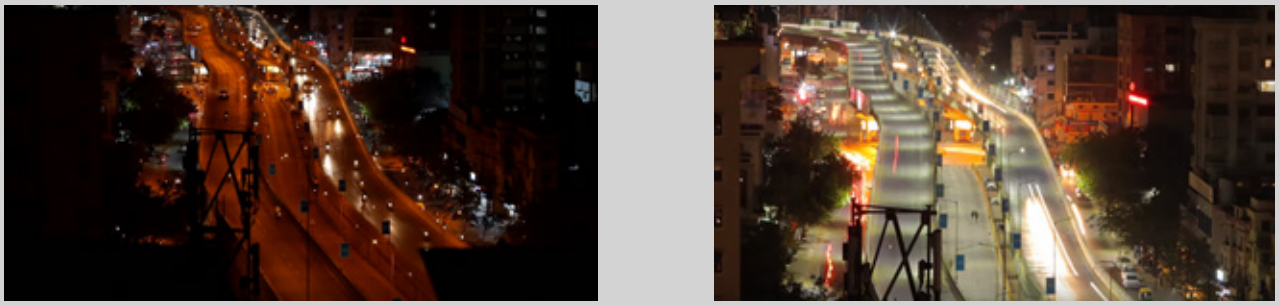
Financial Structure of the initiative

Financial grant from the European Commission through the Urban-LEDS program was provided for this project

Achievements

Benefits and Co-Benefits

- Improved illumination levels and uniformity has not only provided better aesthetic appearance but also reduced rate of accidents and improved quality of life of citizens
- Rajkot city government has saved more than **8.5 million kWh** conventional electricity (more than 60% of total electricity consumption from the sector before), which translates into savings of INR 50 million ($ 0.75 million) and 7,000 tonnes CO_2 eq. GHG emission reduction through the project
- As Energy Efficiency Services Limited (EESL) is responsible for overall comprehensive operation and maintenance for 7 years, and all streetlights are managed automatically by Central Control Monitoring System (CCMS), not only enables maintenance without any delay but city government also saves INR 25 million ($ 0.38 million) from the maintenance of old HPSV fixtures
- Online monitoring through CCMS and installation of smart panels enables city government to identify illegal theft from street lighting panels
- Project improved confidence level of city government and energy saving company with improved illumination level, uniformity ratio, benefit from energy savings and reduced maintenance costs
- Reduced rate of accidents, aesthetic appearance, improved working hours for road side vendors and enhanced public safety are added social impact through project



Before and After Project - Illumination levels with HPSV lights on 150ft Ring Road, Rajkot

Success Factors

- Technical innovations for effective implementation of the LED street lighting project
- Strong and effective leadership
- Multi-level coordination and partnership

Limitations

The project faced following challenges:

- Implementation challenges, such as removal of 10-15 years old corrosive fixture from poles as well as difficulties in fixing new LED fixtures on old lighting pole arms
- Approval of the technical innovations of the technology

Future Prospects

- The project has built-in savings that will provide energy and maintenance savings for future years and has high replication potential.

Source: Case received from the city

For more Information

https://timesofindia.indiatimes.com/city/rajkot/LED-bulbs-to-light-up-Rajkot-streets/articleshow/52426551.cms
http://archive.indianexpress.com/news/rs-2.3crore-led-street-light-project-of-ruda-lights-up/1102626/
https://mnre.gov.in/file-manager/UserFiles/Master-Plan-Solar-City/Rajkot_solar_city_master_plan.pdf