



European
Commission



LIFE-DIADEME: 'Green light'

A novel sustainable and cost-efficient street lighting dimming system

Energy consumption of cities and urban areas

Cities and urban areas consume the majority of Europe's energy and are responsible for most of its greenhouse gas emissions. Street lighting is a crucial public service provided by local and municipal authorities, contributing to road safety, personal security and the overall quality of life in urban communities. However, it represents a significant share of energy consumption.

At the time when LIFE DIADEME project began, there were over 90 million traditional streetlights in Europe. In most European municipalities, public lighting accounts for 50% of electricity consumption and 60% of energy costs.

Solid-state lighting (SSL) is a promising solution that can reduce electricity consumption by up to 50% and significantly decrease maintenance costs. The deployment of energy-saving SSL and smart adaptive lighting technologies is essential for sustainable and smart cities

Lighting the Future

The LIFE-DIADEME project demonstrated the advantages of an innovative adaptive public lighting system in Italy, at full-scale demonstration sites in Rome, Piacenza and Rimini.

The real-time adaptive regulation technology automatically adjusts lighting intensity based on several parameters, including constantly monitored traffic loads, light flow based on surrounding brightness, and weather conditions. Therefore, this system significantly reduces energy demand while acquiring environmental data at the city level which benefits planning and policy-making.

The adaptive DIADEME systems achieved a reduction in energy consumption by an average of 57% compared to a full light system and by almost 41% compared to a pre-programmed system where lighting intensity decreases according to a predefined time schedule based on statistical data.

DIADEME systems enable the creation of reliable urban noise maps thanks to noise sensors and an algorithm developed under other LIFE projects. The project team also demonstrated accurate mapping of air quality at the urban level due to the installation of innovative air quality sensors and machine learning software, and data validation performed in collaboration with the regional environmental authorities of the three demonstration sites.

The adaptive lighting technology can reconcile the safety needs of a city with the benefits of energy-saving and the reduction of CO2 emissions and maintenance costs.

Green light (a message from the coordinating beneficiary – Revetec gruppo MPES)

"DIADEME project experimented with an innovative approach to the regulation of light flow in an urban environment, thanks to the European LIFE Programme. The Adaptive Lighting Technology can reconcile the safety needs of a city while providing the benefits of energy-saving and the reduction of CO2 emissions and maintenance costs."

Learn more

Project acronym: LIFE-DIADEME

Reference: LIFE15 CCM/IT/000110

[Project website](#)

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