

# Dynamic Lights—Towards Dynamic, Intelligent and Energy Efficient Urban Lighting

## THE CHALLENGE

The Dynamic Light project focusses on reduction of CO<sub>2</sub>-emissions and enhancement of energy efficiency in public lighting. Public lighting causes ca. 6% of the global CO<sub>2</sub>-emissions. Many conventional lighting fixtures need to be changed to energy efficient lights. However, public authorities lack a strategic approach to convert their lighting infrastructure. Dynamic lighting has the potential for even higher energy efficiency. The current challenges of dynamic lighting are a missing legal framework for dynamic dimming of lights and higher initial costs compared to standard LED lights. Therefore municipalities hesitate to invest in dynamic lighting. But the uprising topic of light pollution and a necessary improvement of quality of public lighting brings dynamic lighting on the agenda, which can contribute to both: increase of energy efficiency AND quality of stay in city areas.

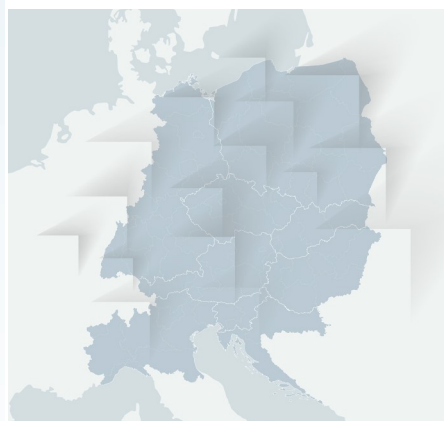
## DYNAMIC LIGHT PROJECT

The project demonstrates the how-to-do of a whole process of how a city can get an energy efficient lighting, starting from the idea, analysis, GIS data mining, strategy development, financial models, procurement rules, implementation and evaluation. This goes hand in hand with pilot demonstration investments to increase the acceptance of energy-efficient lighting among end users and town planners by improving the quality of dynamic light and adapting it to social needs.

The project will explore different public lighting situations that are typical for European municipalities. The core idea is that the technical aspect of lighting needs to be better connected to urban planning aspects in order to adapt it to technological possibilities. Especially innovative is that dynamic light shall be applied to optimize the lighting design of public spaces, reduce light sources and light intensity in order to lower light pollution and energy consumption. The project will develop parameters for dynamic light (brightness, colour, light scattering, glare) that meet the social needs (safety, visual identity, attractive city areas, reduction of light pollution). It will test its performance at different urban area types to adjust the technological standards and regulations to dynamic lighting to better utilize the so far unused potentials of it. The project will lay the foundations for more controllable and higher quality lighting solutions with enhanced visual performance and improved ambience and safety of urban environments across Europe.

The project will increase the capacities of public authorities through knowledge transfer about benefits of dynamic lighting and how to apply it in practice. The developed master plans, financial guidelines and trainings will facilitate investments in intelligent and energy efficient lighting solutions in a long-term perspective. The integration of dynamic lighting into standards, norms and procurement rule will be initiated through the project activities.

The project outputs will serve as transferable models to reach out the municipalities outside the partnership by supporting the inclusion of dynamic lighting in procurement rules, climate action plans and urban planning strategies. The general practice of non-strategic replacement of light sources will change towards energy efficient, demand-oriented strategic light design planning and better public light management.



## PARTNERSHIP

University of Applied Sciences Wismar, Germany

Business support centre Ltd., Kranj, Slovenia

PORSENNA n.g.o., Czech Republic

Medjimurje energy agency Ltd., Croatia

Municipality of Cesena, Italy

TEA SpA, Italy

Bruno Kessler Foundation, Italy

Spath MicroElectronicDesign GmbH, Austria

City of Graz, Austria

Ernst Moritz Arndt University of Greifswald, Germany

SWARCO V.S.M. GmbH, Germany

Deutsche Lichttechnische Gesellschaft e.V. (LiTG), Germany

Poltegor-Institute, Poland

Hanseatic City of Rostock, Germany

Town of Čakovec, Croatia

## PROJECT OUTPUTS

- Strategy to promote dynamic lighting in accordance with social demands & state-of-the-art technology
- Strategies with action plans for city lighting & reduction of light pollution incl. dynamic lighting
- Strategy to facilitate the integration of dynamic lighting into EN 13201 and related regulations
- Strategy to facilitate the integration of dynamic lighting from a legal perspective
- Manual on dynamic lighting and social needs
- Manual on transferable technical solution
- GIS-based databases for municipalities as models to facilitate strategic planning of dynamic lighting
- Guideline for urban planners on the integration of dynamic lighting into public lighting systems
- Guideline on finding the suitable financial model for public lighting investments
- Course curricula and training material on planning & implementing innovative lighting solutions
- Handbook about interpretation of EN 13201 and room for implementation of dynamic lighting
- Pilot actions demonstrating effects of dynamic light on energy efficiency and user acceptance
- Trainings for municipal staff, urban & light planners
- Dynamic smart lighting investment in Mantova
- Test pilots Town of Čakovec, Glienicke/Nordbahn, Gorenjska region (3 local communities Bled, Jezersko, Tržič), Graz and Cesena

## MAIN OBJECTIVE

The main objective of the project is to make a shift from municipal light infrastructure planning towards a modern energy efficient and demand-oriented lighting design and better light and energy management. The process itself presents smart solutions that will be developed and implemented as test pilots within the project lifetime. They will significantly contribute to the reduction of CO<sub>2</sub>-emissions in local authority districts & regions and enhance the quality of stay.

## SPECIFIC OBJECTIVES

- Promoting user-accepted energy efficient lighting solutions by improving the quality of light according to social needs
- Strategies for improving and implementing harmonized public lighting standards and norms
- Capacity building to improve the energy efficiency in public lighting infrastructure and positive image-building for the application of dynamic lighting and energy-saving

## EXPECTED RESULTS

The expected result is to get the best relation between highly energy efficient public lighting infrastructure and the quality of stay in urban areas through better light quality. This implies also to develop public lighting standards & norms to better meet social needs and make the application of dynamic lighting possible. It furthermore needs capacity building and awareness-raising for dynamic lighting & energy-saving potentials. The project will demonstrate the process of how a city can implement energy efficient lighting starting from the idea&analysis, GIS data mining, strategy development until financial models, procurement rules, implementation and evaluation. This goes hand in hand with the joint implementation and testing of pilot demonstration investments to proof the benefits and increase acceptance of energy-efficient lighting among end users and town planners.

## PROJECT DURATION

01.06.2016—31.05.2019

## GRANT

ERDF Funding 2.851.809,29 EUR

## LEAD PARTNER

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