

PLUS (Public Lighting Strategies for Sustainable Urban Spaces), financed by the EU's INTERREG IVC programme, capitalizes on existing urban lighting best practices on energy efficiency in European cities. It aims to offer a set of recommendations leading to the improvement of cities' lighting strategies and action plans.

PLUS partners

- Lead Partner: Eindhoven (The Netherlands)
- Bassano del Grappa (Italy)
- Birmingham (UK)
- Burgos (Spain)
- Iasi (Romania)
- Leipzig (Germany)
- Lyon (France)
- Nice Côte d'Azur Metrople (France)
- Patras (Greece)
- Sofia (Bulgaria)
- Tallinn (Estonia)
- LUCI (Lighting Urban Community International)

Programme: INTERREG IVC
 Total budget: 1 689 508 €
 Duration: October 2010 to December 2012



With the hosting of the conference on "LED Lighting Strategies for Urban Spaces" in Brussels this June, the PLUS project now enters a new phase of reflection and analysis. The conference will provide only a brief preview of what project partners are hard at work developing - their cities' respective lighting action plans and future lighting strategies. Identifying, adapting and incorporating new lighting practices according to the need of one's own city are not only the key challenges but also the major benefits of this project.



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Workshop

➤ Leipzig: 2nd Regional Forum



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The City of Leipzig organised its 2nd Regional Lighting Forum on the 30th of March 2012, successfully bringing the city one step further in the development of its future lighting strategy.

"We were very excited to present the PLUS lighting experts' Deep Dive feedback to the lighting stakeholders in our municipality. This gave us the opportunity to discuss the strengths and weaknesses of the current lighting situation, which will contribute to the formulation of our SWOT analysis," explains Heike Besier, Deputy Leader Section Public Space Design in Leipzig.

The City of Leipzig hosted its Deep Dive event on the 16th and 17th of January 2012 where visiting PLUS lighting experts discussed Leipzig's public lighting with the heads of the lighting department, engineers and technicians, as well as partners from the university and the City Council in workshops and interview sessions. They also visited new lighting installations in the city centre and discussed Leipzig's sustainable lighting practices.

➤ PLUS perspective on LED lighting strategies in urban spaces

How can cities incorporate LEDs into their lighting strategies? What are the implications in terms of planning, procurement, and financing? How can they deal with the issue of social acceptance? Most of all, what could be the most appropriate timeline?

consider using LEDs, and this is what we aim to do at this conference," says Rik van Stiphout, PLUS Project Manager.

The PLUS conference on "LED Lighting Strategies for Urban Spaces", held on the 20th of June during the EU Sustainable Energy Week 2012, will bring together the knowledge on the use of LEDs in outdoor lighting as well as a preview of some of the first conclusions on the topic from the PLUS project. *"It is important to discuss the challenges that confront cities as they*

The conference will offer a wide variety of perspectives on LED projects and research with speakers such as Paolo Bertoldi from the European Commission Joint Research Centre (JRC), Michael Ziegler from the Photonics Unit of the European Commission, as well as presentations from other European projects such as BLISS and LED - Light in Public Space.

Programme and registrations at www.luciasassociation.org/plus

Get your copy of the PLUS magazine!

This June, the PLUS project will release a special issue magazine highlighting best practices in sustainable urban lighting within the PLUS project and beyond. **Contact luci@luciasassociation.org to get a free copy.**

↘ Feedback from the ESOLi project on intelligent street lighting

The European project, ESOLi (Energy Saving Outdoor Lighting), which aims to promote intelligent solutions for street lighting, held a conference in Frankfurt on the 17th of April 2012. Sabine Pillar, from the Berlin Energy Agency tells us what was discussed.

■ What knowledge has the ESOLi project gathered on intelligent street lighting (ISL), and how can this help municipalities?

The project offers information and advice to municipalities on specific public lighting issues and supports them by developing a series of practical tools. Now we are in the second part of the project duration and some of the results achieved include a best practice catalogue, over 30 national workshops, and an international conference training seminar. This year we will organize 2 study visits and 14 training seminars on ISL all over Europe.

■ What are the major challenges faced by cities in implementing intelligent street lighting?

Usually the biggest obstacle is that municipalities do not have sufficient funds to face the initial investment in ISL, although a lot of them are aware of the long term benefits. The public lighting systems are very often old, and ISL requires renovations and high investment costs. The payback period is variable but usually more than 5 years, depending on many factors, although savings on the electricity bill and on lower maintenance cost are immediate, as are the social/environmental benefits. An uncertainty factor for decision makers is the abundance of offered technologies and they often lack sufficient information to make their choice. Additionally, there are several concerns regarding LED technologies.

■ What were the trends in ISL as highlighted by the conference?

An increasing number of municipalities are now replacing their old fashioned and inefficient street lighting by LED street lighting systems.



The trend is going towards implementing so called "smart or intelligent lighting systems", providing the respective quantity of energy needed at the particular time and location.

■ What were the conclusions of the conference?

From the practical point of view, the conclusion is that a lack of knowledge and experience in the modernization of street lighting systems constitutes a barrier for many municipalities and communal energy suppliers. To overcome existing restraints, it is important to involve both groups of actors - the municipalities and the utilities - in the project planning process for future innovative projects on street lighting.

Read the full interview

at <http://www.luciassociation.org/plus-forum.html>

↘ Sofia introduces LED in street lighting



The City of Sofia recently developed and publicly presented its first LED street lighting project, which includes a package of technical measures that will modernize the public lighting system and cut its energy bills.

In some areas of the city, all sodium high pressure, mercury and luminescent lamps will be replaced by energy effective LED systems. These measures will result in an annual decrease of the electricity costs by 386 998 € and a further 191 979 € as maintenance and repairs savings.

The project, which is expected to start at the end of 2012, includes areas in the centre of Sofia as well as the regions Druzhba 1 and 2, Ovtcha Kupel 1 and 2, Tzarigradsko Shose boulevard and Bakya - representing approximately 12% of the Municipality's territory and approximately 10% of its population.

The overall value of the project is 5 million €, 20% of which are from the municipal budget, and the remaining 80% will be co-financed by the international fund "Kozloduy (2010- 2013)."

The international fund "Kozloduy" was established to manage the EU grant for early decommission of the first four blocks of the Kozloduy nuclear power plant. Among the funded measures are also those for the reduction of the negative consequences for the energy sector resulting from the closure of the blocks.

↘ Nice to begin new mercury lamp replacement programme

The Public Lighting Directorate of Nice Côte d'Azur will be replacing 1300 mercury lamps as part of an initiative funded by the French Environment and Energy Management Agency.

The replacement programme will reduce energy consumption by 50% for each luminous point, reaching the so-called "factor 2". This operation not only has a positive effect on the environment, but will also generate savings of over 30 000 € per year. "This is one more step towards achieving the 20-20-20 objectives," declares Jean-Charles Maleysson, Project Manager in Nice.

Nice Côte d'Azur recently became the first inter-communality in France to turn into a "Metropole" gathering a total of 46 cities, and this project is in line with the Public Lighting Directorate's policy to ensure equal

access to public lighting throughout the new territory and to help smaller cities (under 2000 inhabitants) improve their energy efficiency.



↘ Researchers explore public response to new street lighting practices



A symposium on "New ways of lighting the streets at night" will take place at the 22nd IAPS (International Association People and Environment Studies) Conference at the University of Strathclyde in Glasgow from the 24th to the 29th of June 2012. Antal Haans, Assistant Professor of environmental psychology of human-technology interaction in

Eindhoven, and organiser of this thematic session on lighting tells us more...

■ What is the objective of the symposium?

The symposium aims to bring together researchers interested in the psychological requirements behind, and end users' appraisal of, new lighting technologies. This is necessary as now, more than ever, we are seeing changes in how we light our streets. First of all, the technology itself is radically changing - think of LEDs, OLEDs, and new sensing and wireless communication possibilities that allow for adaptive lighting (i.e., adaptive to end users' needs and preferences). Secondly, there is the societal demand for more sustainable lighting, with respect to reducing both energy consumption and light pollution. Currently however, our psychological understanding of people's preferences and appraisal is far behind.

■ What have you learnt by evaluating users' experiences with new lighting technologies?

At the Intelligent Lighting Institute in Eindhoven we are currently investigating the technology and psychology of intelligent dynamic

lighting. What we have learnt from our initial field experiments on people's appraisal of various dynamic lighting scenarios is that it is difficult to formulate requirements for dynamic lighting installations, because we do not have sufficient theoretical understanding of how perceptions of safety are formed and what the role of lighting is in this process. This lack of theoretical understanding is not limited to dynamic lighting, but is general to the field of public lighting.

■ What are some of the factors that contribute to or impede public acceptance of new lighting technologies?

This remains to be seen. In any case, I suspect it to be a combination of people's beliefs about a lighting technology (e.g., with respect to environmental impact), their trust in the claims of municipalities and lighting manufacturers, the manner in which the new lighting system is implemented (i.e., do citizens have a say in, for example, the type of luminaire), and of course, their direct experience with such technologies when implemented in their own streets. As such, little has changed in comparison to more conventional lighting. However, I expect the end user's appraisal to become more important nowadays, simply because there will be more to choose from - because more technological options become available of which the public too is increasingly aware.

More information on the conference and full interview at <http://www.luciassociation.org/plus-forum.html>

↘ ISO certification for Lyon's public lighting department

The Public Lighting Department of the City of Lyon has just received the ISO 14001 certification for environmental management. The certification is based on the principle of continuous improvement in environmental performance and continuous control of the ecological impact associated with the activity of an organisation.

The public lighting logistics department was audited by the BCD agency and was awarded the certification earlier this year. "The Public Lighting Department has been engaged in sustainable development for a number of years, and we wanted to reinforce this engagement through this process of certification," declares Antoine Bouchet, Director of Public Lighting in Lyon.

The department now aims to have all its subdivisions certified by 2013.



↘ Tackling light pollution with green LEDs in Eindhoven (The Netherlands)

The City of Eindhoven has implemented an innovative new project using green LEDs on Velddoornweg, a rural road on the outskirts of the city. Arthur Noordhoek, Project Manager Lighting for the City of Eindhoven tells us more about this initiative...

“A new innovation for lighting that respects green areas”

■ What were the municipality's objectives in the project?

Velddoornweg is a road which runs through a rural area and which connects Eindhoven with the surrounding villages. This is an important cycling route through an area with lots of trees. Usually, if a key cycling route passes through a nature reserve, an assessment is made as to whether lighting which enhances safety for cyclists and which has a minimum harmful effect on the flora and fauna can be installed. We were looking for lighting respecting the green structure, meaning as less light pollution as possible and as less inconvenience as possible for the animals.

■ What are the main lines of action?

In search of a lighting solution that minimized energy consumption as well as light pollution and disturbance to the natural fauna, we decided to install dynamic green LED lighting. 38 luminaires along the 1 km long Velddoornweg road light up when necessary through a dynamic system. Doppler detectors are used to detect cyclists. The LEDs are equipped with a wireless radiofrequency system through which each LED can be controlled separately. The system was delivered in the beginning of September last year, and we are currently experimenting with the technique and the different levels of light intensity.

■ Why green LEDs?

We choose green lighting for Velddoornweg because, as proven by scientific research, at low light levels the human eye is more sensitive to light in the green part of the spectrum. Using this mesopic efficiency, less light can be used compared to normal light sources to get the same visibility. Additionally, when light is used for the detection of traffic, animals are more comfortable with the lower light level. This is a new innovation that we are experimenting with. Being a living lab, the City of Eindhoven chooses with emphasis not to implement fully developed products and offers companies and researchers the chance to test and refine their products and ideas.

■ What consequences has this project had?

The use of detectors in combination with green light results in a minimal disturbance of the ecological environment, while it also provides sufficient visibility for safe use by particularly slow traffic. The feedback from users has been generally positive although we have had some problems regarding vandalism and theft of detectors. An evaluation of the project is planned in the near future.



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IDENTITY CHIP

Location: Velddoornweg, Eindhoven

Population: 218 000

Implementation

Project launch date: October 2010

Duration of the work: 6 weeks

Inauguration date: September 2011

Stakeholders

Contracting authority: City of Eindhoven

Lighting design: Mijnsen Dynamische Mobiliteit B.V.

Manufacturers: Innolumis Public Lighting B.V. (luminaires) -

Nedal Aluminium B.V. (poles) - Maiken B.V.(controls)

Installation: Heijmans Technische Infra B.V.

Maintenance: Heijmans Technische Infra B.V.

Budget

Total cost: 67 500 €

Technical

Luminaires: Golden Green

Lamps: Lumis LED

Power (watts): 36 W

Energy consumption: variable (depending on detection)

Estimated life expectancy: 80 000 h

Find this experience and many others in the **best practice database** at www.luciasassociation.org/plus