

SUSTAINABLE PUBLIC LIGHTING

A collaborative and multidisciplinary
approach to designing territory and
context-related outdoor lighting
infrastructures





Urban lighting sustainability: state of play

Energy stakes, urban population changes
and needs, environmental crisis



**SUSTAINABLE
PLACES 2023**



This project has received funding from
the European Union's Horizon 2020
research and innovation programme
under grant agreement No 869227

The public lighting as a vehicle for sustainability

State of play: energy aspects

Public lighting represents:

40% to 60% of a city's
electricity bill

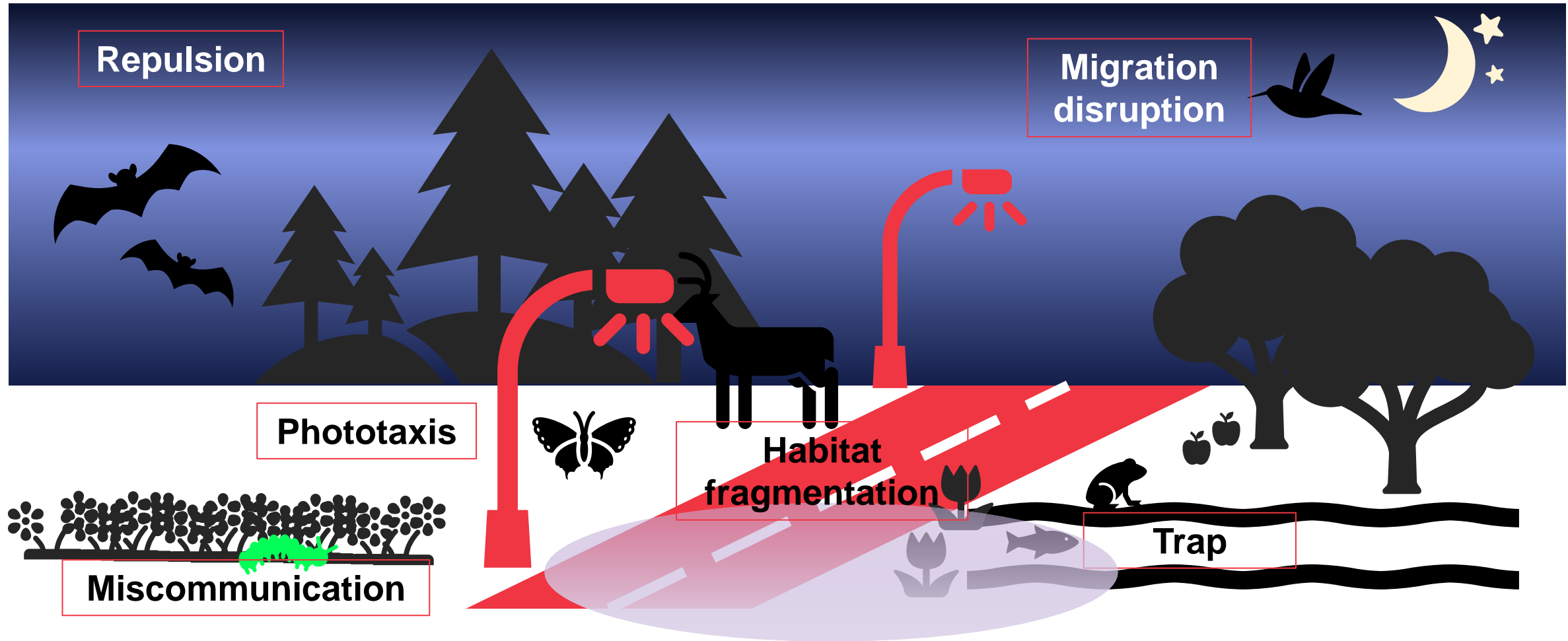
326 millions of light points
worldwide
with a global growth of **13%/year**

75% of obsolete and non-efficient
technologies



The public lighting as a vehicle for sustainability

State of play: impact on biodiversity



The public lighting as a vehicle for sustainability

State of play: social aspects

For social aspects, urban lighting represents:

- **Security** improvement
- **Feeling of safety** improvement
- **Community pride** improvement



The public lighting as a vehicle for sustainability

Renovating traditional lighting to new technologies

ENERGY SAVINGS – REDUCED MAINTENANCE – REDUCED IMPACT ON CLIMATE CHANGE




Save 50% to 80% of energy
E.g: the renovation of a city of 105,000 light points to LED lighting can save 167 tCO₂eq/year




Longer lifetime
50% reduced maintenance costs
Combined with energy savings, the return on investment of the renovation to LED lighting is under 7 years

BETTER LIGHTING



Better control on the illumination
Allows to illuminate only *where* and *when* it is necessary




Improved light quality
Finely tuned light level, light spectrum, to fit the time and the place

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ADDITIONAL SERVICES



Connectivity - networking


Electric vehicles plugs, WiFi/4G/5G antennas



Energy production


Solar panels, wind turbines, batteries

BETTER UNDERSTANDING OF THE TERRITORY'S NEEDS



Environmental sensors

Recording of environmental parameters (humidity, temperature, wind, biodiversity) and monitoring the effect of more sustainable policies



Social sensors

Monitoring the use of the public space (car, pedestrian, bicycle count, motion sensors, etc).



The example of the InHABIT project

Lighting design procedures and solutions
elected in each partner city



The InHABIT H2020 project

Inclusive Health And wellBeing in small and medium-size cITies

InHABIT aims at co-designing, co-developing and co-managing **innovative and integrated solutions** in some selected urban public spaces, by mobilising **already available but under-used resources**.

To do so, it is relying on the mobilisation of **Public-Private-People partnerships** in each partner city.



2.1

The lighting of the Las Palmeras neighbourhood in Cordoba



Creative lighting to improve the inhabitants' use of public space and natural areas



InHABIT project in Cordoba: Las Palmeras neighbourhood

Las Palmeras is a **disadvantaged neighbourhood** located in the outskirts of Cordoba, mainly composed of social housings, where the **unsecurity is high**.

Among other tasks, InHABIT aims at improving the health and wellbeing of its inhabitants by co-designing and implementing **urban planning elements** inspired by **nature** and by the **local culture heritage**.



InHABIT project in Cordoba: Las Palmeras neighbourhood

Lighting project: improve nighttime experience and community pride

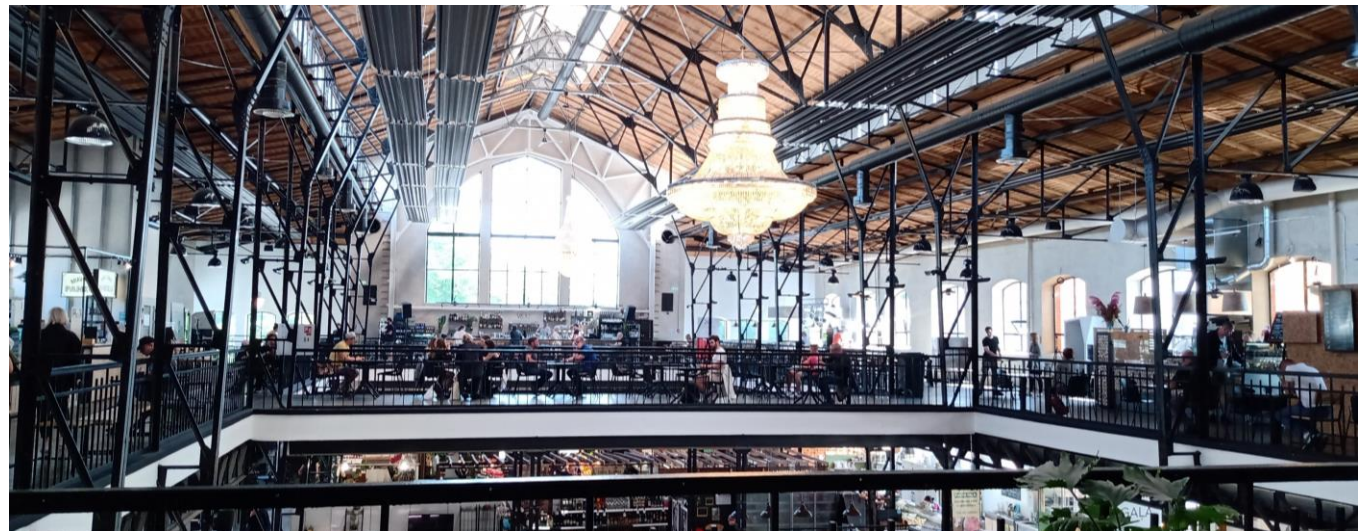
Objectives of the lighting project:

- to improve the accessibility of the inhabitants to the **outdoor public space**, especially in newly refurbished and **greener areas**;
- to improve the **sense of safety** of the pedestrians;
- to contribute creating a **warm community atmosphere** in social areas using creative and colourful lighting;
- to implement **energy-saving solutions** with a limited impact on the skyglow.



2.2

The lighting of the Agenskalns market in Riga



How to get back into community gathering thanks to multipurposes spaces



InHABIT project in Riga: the Agenskalns market

The Agenskalns neighborhood is a popular area of Riga which has been undergoing a complex evolution in terms of economic opportunities and activities, types of dwellings and populations.

The refurbishment of the **Agenskalns market** falls within an approach of revitalising the sense of community and local economy by giving a new purpose to historical buildings fallen into disuse. To that end, the indoor market has been turned into a **craft and groceries market**, a **food court**, a **community kitchen** and a space hosting **business development** workshops, as well as **social events**.



InHABIT project in Riga: the Agenskalns market

Lighting project: a festival of lights

The lighting project in Riga will consist in:

- animating workshops about **lighting technologies** and the relationship between **lighting and sense of safety**
- hosting a **lighting event** where the spectators are also stakeholders and artists.

Objectives:

- to **raise different stakeholders' awareness** of the stake of lighting, energy and feeling of safety at night in a city;
- to support the community activities and question the **nighttime accessibility of the public space**



2.3

The lighting of the animal lines in Lucca



To quantify the impact that public lighting has on biodiversity



InHABIT project in Lucca: the animal lines

The InHABIT project in Lucca focuses on how the **relationship between pets and human beings** can improve the health and wellbeing of urban citizens.

To that aim, some parks and natural areas have been specifically designed to improve the human-animal bond and equipped with lighting infrastructures. However, because of their location in parks, these lighting infrastructures have been designed to impact the local biodiversity as less as possible.

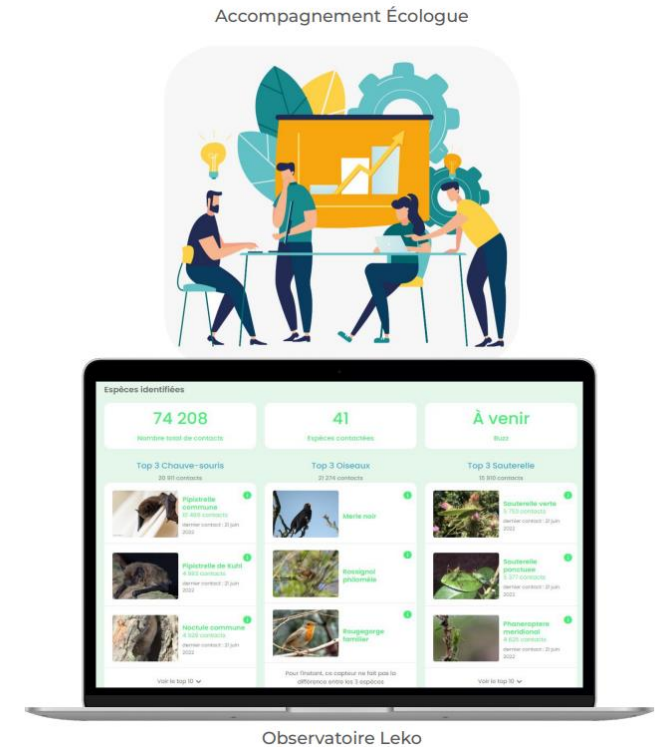
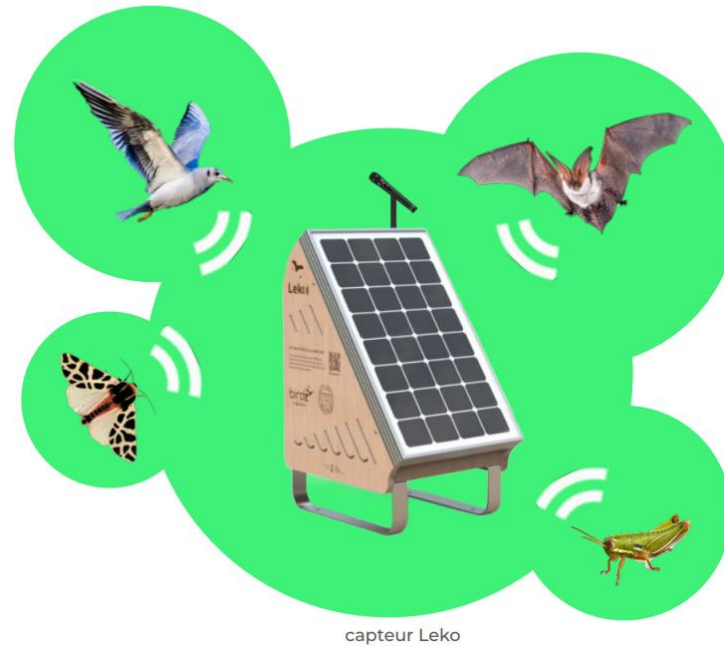
The lighting infrastructure aims at improving **year-long human-animal bond** and **accessibility to natural public spaces**, while **impacting biodiversity as less as possible**.



InHABIT project in Lucca: the animal lines

Lighting project: installation of biodiversity monitoring devices

The monitoring devices in the Lucca project have both educational and research purposes: they allow to visualize “live” the status of the local biodiversity and experts can analyse the results to establish the local illumination status.



2.4

The lighting of a multifunctional corridor in Nitra

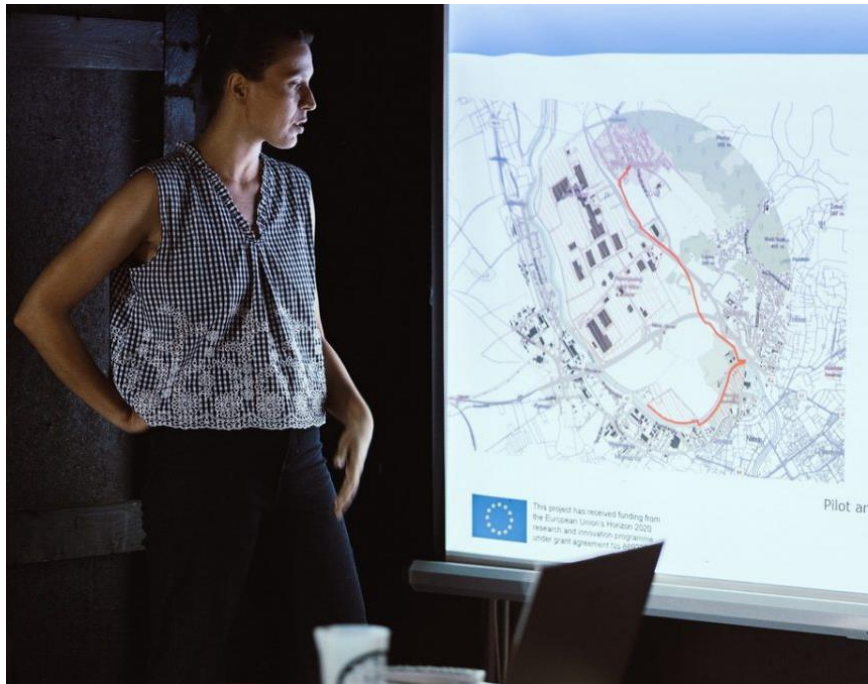


To make social, cultural, educational and sport activities accessible to secluded neighbourhoods



InHABIT project in Nitra: the multifunctional corridor

The InHABIT project in Nitra aims at establishing a **reversible multifunctional urban landscape** along a cycle road linking a **secluded neighbourhood** with the main city. A series of movable multifunctional elements will provide a platform for **social, cultural, educational and sport activities**, including innovative lighting solutions and experimental gardens.



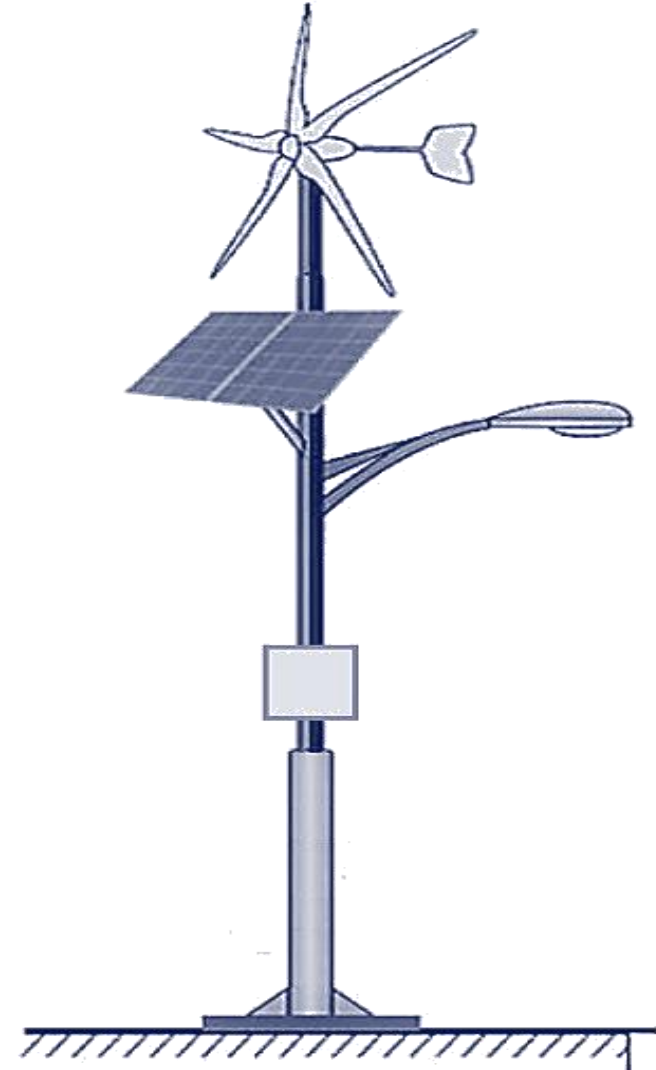
InHABIT project in Nitra: the multifunctional corridor

The lighting project in Nitra will contribute in **implementing a bicycle and pedestrian pathway** that can be used **all year long**.

It especially features:

- **autonomous lighting technology** powered by solar energy to be independent from the grid;
- **innovative monitoring technology** in order to illuminate the pathway only where it is needed, when it is needed;
- **sustainable illumination to limit the impact on biodiversity**: low light levels, warm light temperature, switch on and off strategies.

Objective: to **improve the accessibility of the Hidepark Community Center** for events, even at night and during wintertime.





03


Perspectives

InHABIT key learnings



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KEY LEARNINGS FROM THE INHABIT PROJECT



The lighting project is territory-dependent



The lighting project is stakeholders-dependent

METHODOLOGY AND KEY PERFORMANCE INDICATORS



Stakeholder engagement is key for project success
Involvement tools such as digital tools are key to engage relevant stakeholders



Key Performance Indicators
The InHABIT project will allow to define KPIs intended to disseminate good practices in sustainable lighting projects.



Laborelec
RESEARCH & INNOVATION

Agathe PHAREL

Research Program Manager Deputy of the Lighting and Urban Solutions lab

+32 471 99 64 46

agathe.pharel@engie.com

laborelec.com