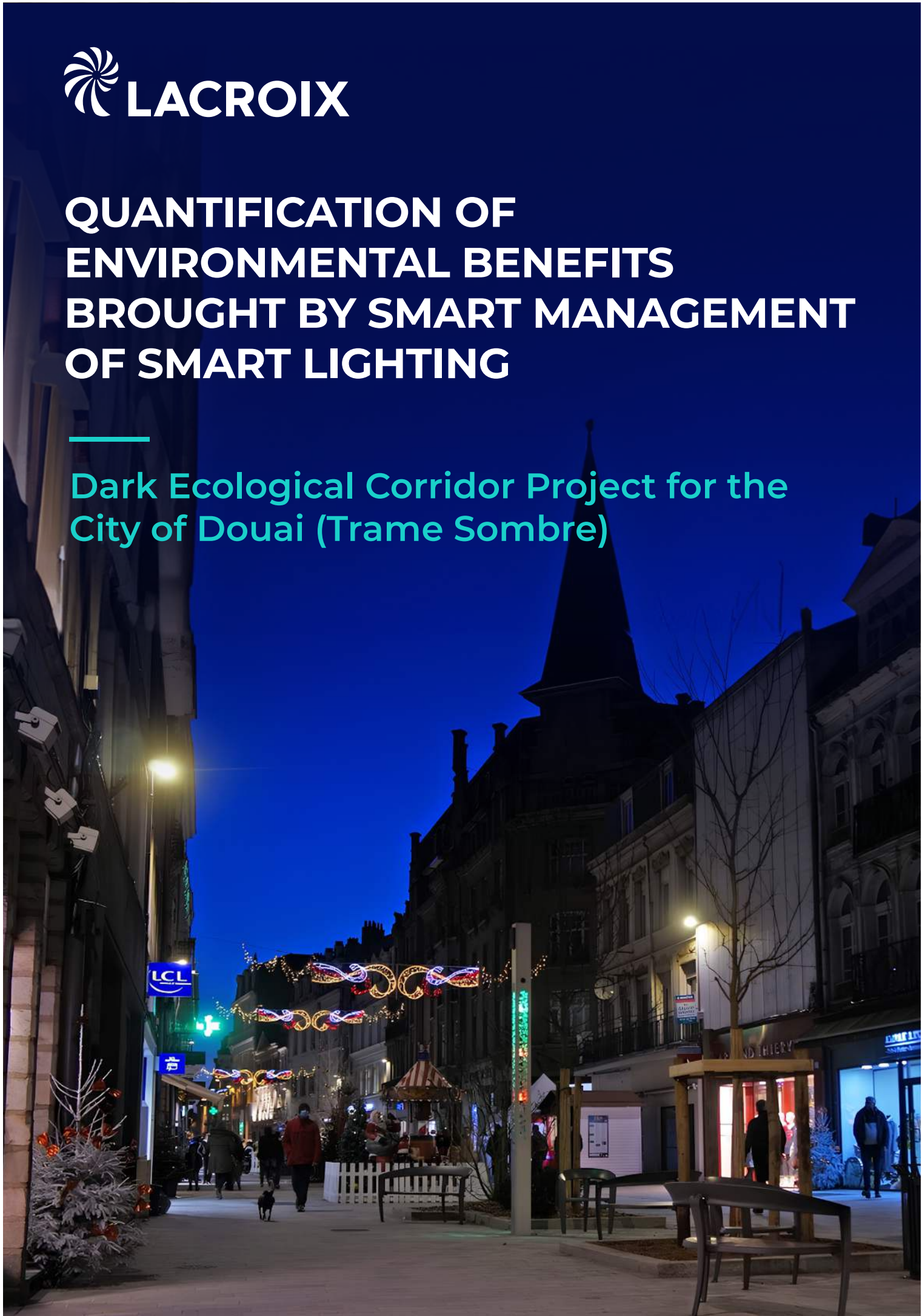




QUANTIFICATION OF ENVIRONMENTAL BENEFITS BROUGHT BY SMART MANAGEMENT OF SMART LIGHTING

Dark Ecological Corridor Project for the City of Douai (Trame Sombre)



Dark Ecological Corridor Project

Douai is a city of 40,000 inhabitants, located in the north of France.

In 2021, the city launched a major project to renovate its public lighting network in pedestrian and cycling areas along the Scarpe river, called "Dark Ecological Corridor."

Study scope in figures

21 km
OF NETWORK

600
LIGHTING POINTS

16,000
RESIDENTS
AFFECTED

100%
OF THE PARK
EQUIPPED WITH LEDs



Project objectives and challenges



Significantly reduce energy consumption and greenhouse gas emissions linked to lighting.



Limit light pollution and preserve biodiversity.



Provide a high level of service to users while ensuring their safety and well-being.



Control energy costs.

Installed solutions

As part of the Dark Ecological Corridor project, the city of Douai installed the Tegis & SensyCity ecosystems:

- The TEGIS remote management includes Central Management Units (CMUs) installed in control cabinets, which allow the reduction of nominal lighting power according to predefined hourly, daily, and seasonal scenarios.
- The SensyCity detection system includes motion detectors for pedestrians and cyclists (SIR). When movement is detected, Tegis communication nodes send the information to the LED drivers located at the base of lamp posts to adjust lighting in real time.

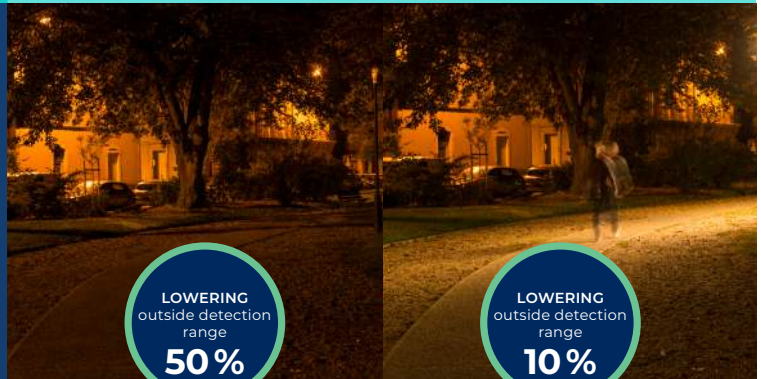
Installed solutions:

Tegis® SensyCity®

- 25** TEGIS CONTROL UNITS
- 791** TEGIS COMMUNICATING NODES
- 568** SENSYCITY DETECTORS
- 604** BASE-OF-POLE CABINETS
- 231** WALL-MOUNTED CABINETS

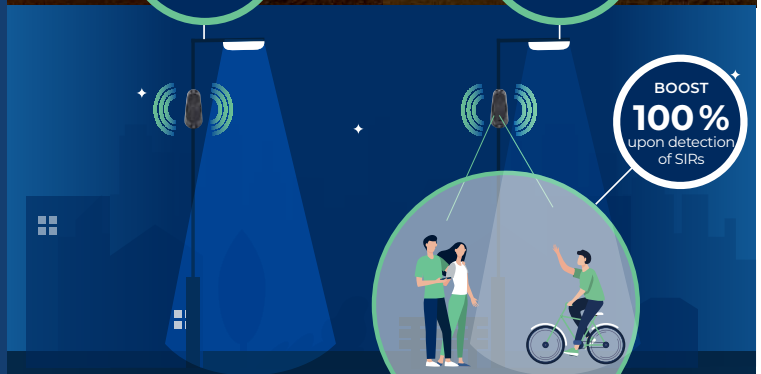
Lowering
outside detection
range

100% boost when pedestrians
or cyclists are detected



LOWERING
outside detection
range
50%

LOWERING
outside detection
range
10%



BOOST
100%
upon detection
of SIRs

from 9 PM to 11 PM

from 11 PM to 5 AM

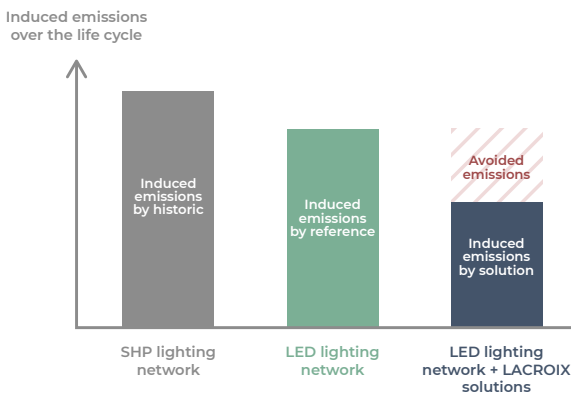
MEASUREMENT OF WATER, ENERGY SAVINGS AND AVOIDED GHG EMISSIONS THANKS TO LACROIX SMART MANAGEMENT SOLUTIONS

Reference scenario

To isolate the benefits related to the installation of LACROIX smart management solutions, we chose as a reference scenario a LED lighting network without smart management, which is consistent with the Dark Ecological Corridor project, as the sodium vapor lamps were replaced with LEDs.

Reference scenario adopted here:

LED lighting network without smart management



A quantification method inspired by Empreinte Projet (ADEME)

This method, designed in 2021, makes it possible to precisely quantify the environmental benefits of a project and compare them with its footprint to determine whether its net impact is positive or negative.

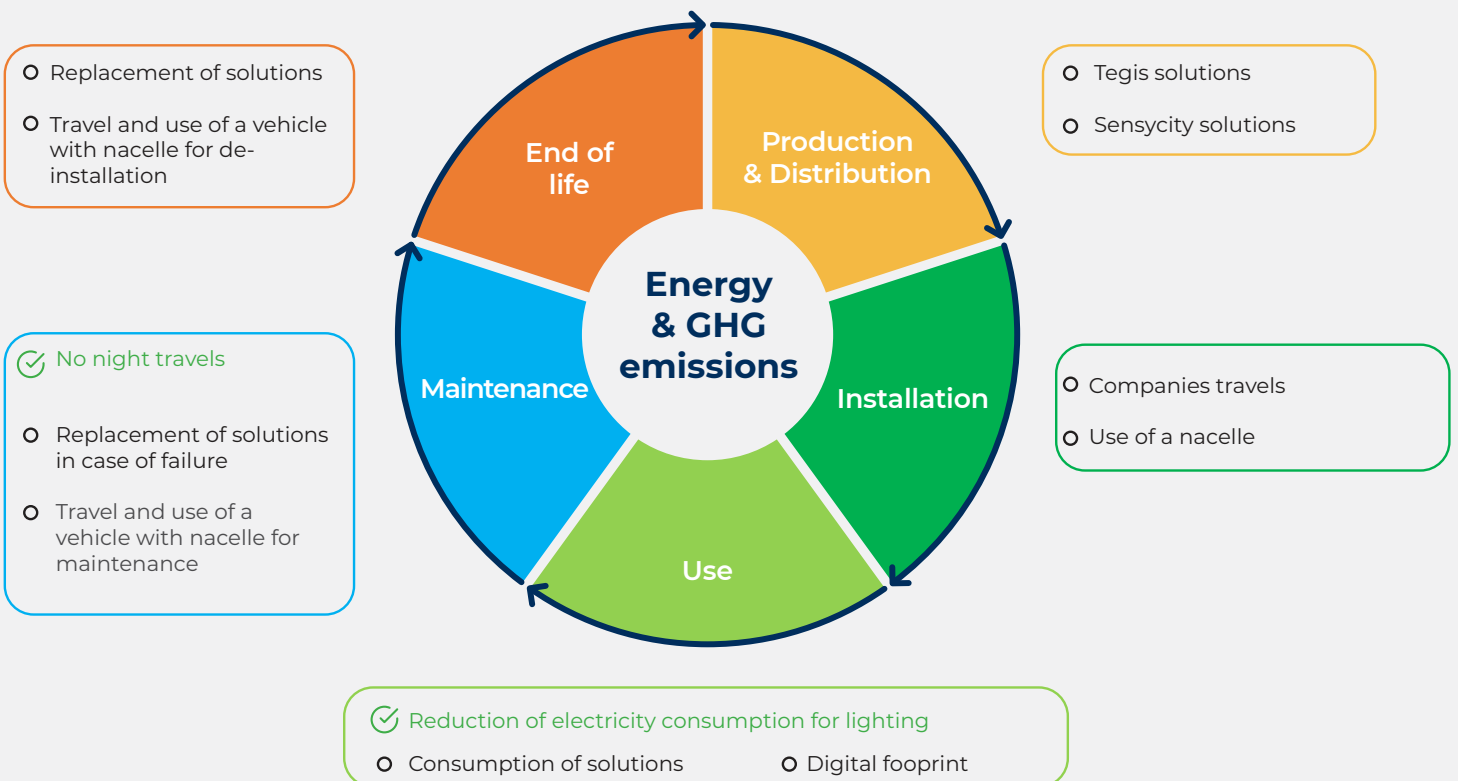
With its five levels of approach, from the most qualitative to the most quantitative, Empreinte Projet enables progressive and iterative implementation, through 12 steps divided into 4 phases.



Source : ADEME, Empreinte projet : Assessing the Environmental Footprint of a Project, September 2021

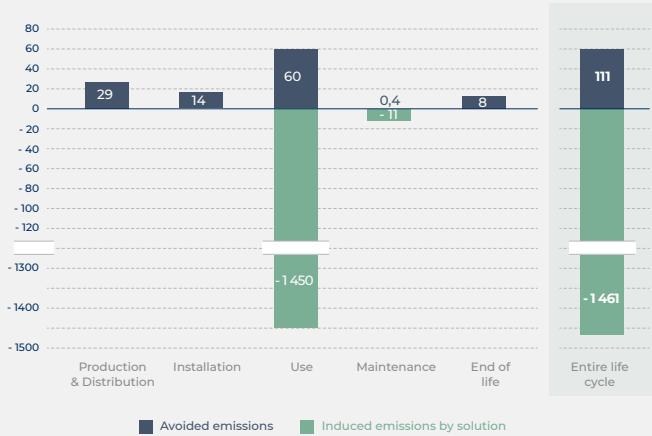
Inventory of quantified items:

Légend: benefits footprint



Results:

Net impact on energy (MWh)



-1349 MWh (-4.3%)

(NET IMPACT over 15 years)

Net impact on emissions (tCO2e)



-70 tCO2e (-37%)

(NET IMPACT over 15 years)

Lessons learned:

- When considering the entire life cycle, it is observed that the net impact of smart public lighting management solutions is very positive: The environmental benefits are **4.7 times greater than the greenhouse gas (GHG) emissions footprint**, and **13 times greater in terms of energy**.
- Installation and maintenance account for 20% of the footprint, highlighting the importance of choosing service providers carefully (distance to the site, electric vs. conventional vehicles, etc.).

Cost analysis:

The energy savings achieved allow for significant financial savings.

For a project equivalent to Douai's Dark Ecological Corridor, we have calculated a potential gain of €180,000 over 15 years brought by smart management, compared to a LED lighting network operating at full power throughout the night.*

*Based on €150 per MWh and a 5% annual increase.

CLIENT TESTIMONIAL

Roger COUILLET
Head of Outdoor Electrical Infrastructure
(City of Douai)

« Since environmental considerations are one of the major focuses of this project, we wanted to quantify the benefits brought by remote management, in order to justify the relevance of our choices. »