

SAFELUX: The Light We Need

CEDR Transnational Research Programme (Call 2024)

Project description

Background

National Road Authorities (NRAs) have traditionally installed road lighting based on the importance of the nighttime safety of road users, reducing the likelihood of incidents and most importantly reducing the number of people killed and seriously injured on the roads. Lighting provision has typically been based on qualitative and quantitative benefits using historic research, focused on road safety. However, there is now increasing importance and relevance placed on the environment, including the landscape, the night sky, decarbonisation, and ecology as well as economics, energy, and sustainability.

Past and current road lighting standards are primarily based on road safety, whilst recognising the consequential impact on society and the environment. Lighting bodies, including NRAs, public services, industry and lighting suppliers are now trying to redress the balance to reduce the impact.

The situation has been further influenced by what could be termed as '*the LED lighting revolution*' over recent years that promised and delivered reduced energy consumption and improvement in nighttime visibility and with it a sense of safety and security. This is also compounded by what could be seen as cheaper and better lighting creating an apparent addiction to light in some parts of Europe. But this has had a consequential impact on the environment as highlighted in the DoRN.

Research Purpose

The CEDR Call 2024 set out the real challenges NRAs are facing and the need for evidence-based guidance to understand, balance, and support decision making. The SAFELUX team fully understand this lighting dilemma and will be looking to answer questions such as:

- What are the true impacts of light pollution on nature?
- How can we decrease or mitigate the negative impacts of light pollution on nature?
- How do current national and international standards impact on options available?
- What measures can be adopted to improve energy efficiency? And what adverse impact may they cause?
- How can the cost of installation and operation be reduced without compromising safety?
- What guidance already exists, and is it still valid?
- What is the impact on road users and the community?

The expected outputs are:

- **Practices and Research** – provide a comprehensive review of practices and research across European national road authorities on how to decrease the negative impacts of light pollution on nature.
- **Guidelines** – show how different tools can reduce light pollution and help balance biodiversity, energy efficiency, and road safety.

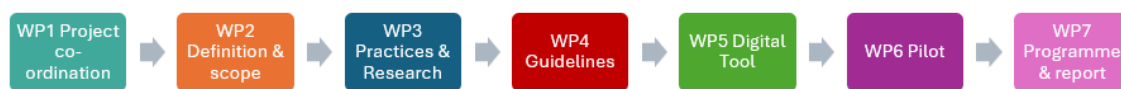
- **Pilot Project** – test new ways to reduce light pollution and energy use whilst maintaining road safety.
- **Final Programme and Conference** – to bring together the findings and recommendations of the project to enable successful implementation.

Value in delivery

SAFELUX will deliver practical and implementable guidance that enables NRAs to make better decisions regarding **where**, **when**, and **how** to acquire and use road safety lighting solutions. Working collaboratively and bound by a common Charter underpinned through an agreed contractual relationship, SAFELUX will ensure that lighting decisions are made with the utmost consideration for safety, efficiency, and environmental impact, by following an approach that:

- Embeds the objectives within each of the work packages.
- Is managed using AECOM's established and successful experience setting common and consistent processes and procedures across the consortium partners.
- Directly engages with lighting suppliers and NRAs through our stakeholder Advisory Group and Knowledge Network to help refine and validate the work package deliverables.
- Completes regular technical and quality reviews to ensure that outcomes meet objectives.

Project Phases



Expected outcomes and benefits to CEDR and others

The SAFELUX aim is to produce consolidated, evidence-backed guidelines offering NRAs the ability to provide options for highway illumination or route guidance to road users to maintain road safety at night whilst providing a balanced and informed impact on nature and the environment.

As research provides more evidence for NRAs to deliver better and more practical and sustainable solutions, the SAFELUX production of guidelines and a parallel digital tool has the potential for:

- Better strategic planning of nighttime road safety.
- More economical viability, including reduced capital and operational costs.
- Better realisation of climate objectives.
- More balanced and sustainable solutions.
- Creating an informed and balanced approach to highway illumination.
- Highlighting a wider and alternative range of options or measures.

Delivery

The project started in June 2025 and is due to complete in May 2027.

The team

AECOM will lead the consortium, providing the overall project management and coordination with our experts from across Europe, with Haskoning, AETHON Engineering, and Newcastle University each contributing their extensive knowledge and experience within road lighting and safety.