

Smart Street Lighting

Harku County, Estonia

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1. What is the future urban challenge that would need a solution to?

Please describe the challenge of your city / county neighboring a city?

Harku municipality has several small settlements and sparsely populated areas where street lighting is insufficient or entirely absent. This makes evening and early-morning mobility unsafe for residents, especially along the routes between bus stops and homes. As the municipality is located next to Tallinn, it is important to ensure accessible and safe living conditions also outside dense urban areas. In addition, Harku has both national roads and local municipal roads, and harmonizing safety across these is a key challenge so that all residents can enjoy equally safe mobility.

According to Estonia 2035 strategy, one of the goals of a safe living environment is to ensure that people feel safe and comfortable in public spaces in their home area. Smart street lighting supports this objective also in low-density areas where traditional solutions have not been sufficient.

Which category your challenge is primarily in: safe city, happy city, and climate resilient city?

Primarily, this challenge belongs to the **Safe City** category, since safe movement and illuminated public space are central elements of a secure living environment. At the same time, the solution also supports the principles of a **Happy City**, because safe mobility increases residents' satisfaction and well-being, and the **Climate-Resilient City** aspect, since smart lighting is energy-efficient and reduces light pollution.

Why is it important for your city to solve it? How big priority it is for you and why?

Safety and accessibility are the foundation of community well-being. If people do not feel safe when moving around in the evening or early morning, this may discourage the use of public transport, increase reliance on private cars, and reduce social cohesion. According to Estonia

2035 strategy, it is important to ensure equal opportunities for everyone to move safely and use public space. Therefore, a smart lighting solution is a major priority, as it directly affects the daily quality of life of residents.

Is this a unique challenge/problem of your city, why or is this by your knowledge a challenge/problem that many cities have – which kind of other cities?

This is not only an issue for Harku – the same concern exists in many smaller municipalities in Estonia and other European countries, where due to sparse population, installing continuous street lighting has not been cost-effective. Estonia 2035 emphasizes regional balance and the creation of a safe living environment everywhere, not only in cities. This makes the solution universal and scalable.

2. Innovation.

How have you solved that issue so far? Why aren't the present solutions good enough? Are there legal obstacles, which ones?

So far, the priority has been larger settlements and main roads. In sparsely populated areas, continuous street lighting has not been considered cost-effective, as it requires major investment and maintenance costs. However, the current approach does not guarantee safe movement for all residents, and it is necessary to ensure equal opportunities also in rural areas. A legal obstacle is partly related to national roads within Harku, where any changes require authorization from the Estonian Transport Administration.

Harku has about 6,600 luminaires, of which 67.4% (4,436) are energy-efficient LED lights. In recent years, we have also invested in lighting control by installing controllers in switchboards, enabling energy savings. Since much has already been done to reduce electricity consumption, the next step should be further reduction. A smart luminaire should include sensors capable of distinguishing pedestrians and cyclists from cars, so that the light switches on only when a pedestrian is passing.

What should be the main features, characteristics of the future solution to be potentially best for that challenge or problem?

- **Energy efficiency:** light turns on only when actually needed, supporting the Estonia 2035 objective to reduce energy use and environmental footprint.
- **Smartness:** sensors distinguish between people, animals, and vehicles, ensuring precise and reliable operation.
- **Affordability and maintainability:** solution must be scalable and adaptable across different areas.
- **Community-centeredness:** residents can provide feedback and participate in developing the solution, strengthening community trust and cohesion.

3. Expected impact of your pilot solution.

What is the expected impact to your city environment you expect to see if the challenge gets solved?

A smart and environmentally friendly solution: energy consumption decreases compared to continuous lighting, and light pollution is avoided since lighting activates only when needed. This supports Estonia 2035 climate goals and reduces environmental load.

What is the expected impact to your citizens you expect to see if the challenge gets solved?

Residents will feel safer, especially children and the elderly moving between bus stops and homes. This will increase public transport use, reduce reliance on private cars, and strengthen social cohesion. It aligns with Estonia 2035 principles of ensuring safe and accessible public space for all.

What is the expected impact to your city governance you expect to see if the challenge gets solved?

The municipality can present itself as an innovative, environmentally responsible, and safety-oriented local authority. Pressure to build expensive traditional lighting systems in rural areas will decrease. The solution demonstrates Harku as a proactive implementer of Estonia 2035 strategy.

4. Piloting

Why would you be interested to become a piloting partner of a proposed solution to the challenge you are describing here? Describe shortly your capability to participate.

Harku is a fast-growing area next to Tallinn and is seeking innovative solutions to improve residents' quality of life. We are ready to provide pilot locations (bus stops in smaller villages) and collaborate with technology developers and project partners. The municipality has established community contacts and the capability to evaluate the practical effectiveness of the solution.

The pilot project will directly align with the Estonia 2035 goal of safe living environments: reducing risks in public spaces, supporting adoption of smart solutions, and strengthening community safety and cohesion. The solution would create a model that could be expanded to other municipalities across Estonia, contributing to nationwide strategy implementation.