Reasons for the Failure of LP Legislation in Slovenia

Major advances with a Regulation (2007), but road lighting is spreading intensively to new locations

Aleš Šubic

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We need to limit locations of **road lighting**, its extent and intensity

Don’t use standard EN 13201 outside cities/towns and village centres

Where are the limits?

Will we behave as
ABSOLUTE MASTERS of the Earth
or will we take ONLY WHAT WE REALLY NEED?

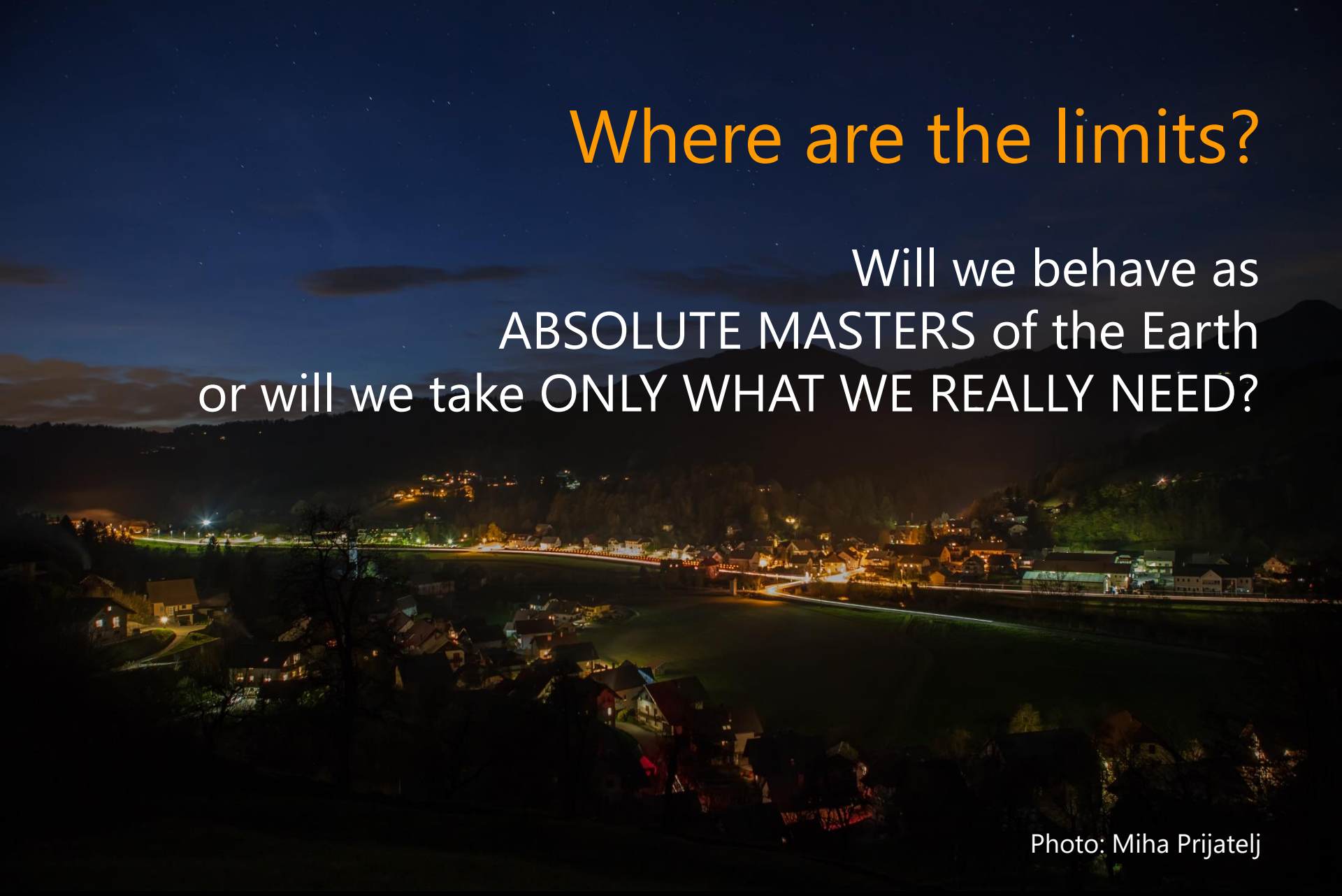

Photo: Miha Prijatelj

Photo: Gašper Pintar

Who/what rules the world?

Slovenia adopted a **LP prevention Regulation** in 2007. Big advances were achieved and the rules are largely respected. Almost no gleaming buildings, bridges, extensive decorations …, some excesses with billboards and sports facilities. Almost all road lighting replaced by ULOR = 0.

Road lighting is intensively and systematically spreading to all populated locations and connection roads between them. Illumination is extensive and intense. Road lighting has become an important factor of environment and also landscape degradation.

Key messages

- Light pollution is only a part of a wider problem: degradation of environment and space/landscape with outdoor lighting
- Lighting locations must be limited more strictly
  - Cost/benefit and needs-based policies
  - Night as a value
- Present lighting standards and recommendations are not sustainable
- A few words in legislation and recommendations can change the situation completely
- Solving environmental problems requires a long march through institutions; who will do that?

Security is the most commonly misused argument for oversized and unnecessary projects

Comfort and satisfying minimum needs have gone far beyond environmental sustainability

Negative aspects of outdoor lighting

- Practical aspects
  - Impacts on live nature, including humans; energy consumption
  - Impacts on human activities, e.g. astronomy
- Aesthetics of space
  - Landscape and cultural environment preservation
  - Aesthetic solutions
- Environmental ethics
  - Preservation of natural environment; are we allowed to completely anthropize the Earth?
  - Are we allowed to light up every village, side-street, connection road, crossroad, highway junction …?
  - One of the key 21st century questions!

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Involved legislation/recommendations

- Rules on road design (only a few sentences on lighting, but many types of road objects are required to be illuminated)
- Slovenian Lighting Society recommendations (based on CIE recommendations, officially not valid any more; recommendations of this level could be the most important starting point)
- Standard EN 13201 (too demanding, misleading, missing info)
- **Regulation on limit values for light pollution** (has effect, but not enough)
- Spatial planning legislation (only starting including LP, no direct effects so far; should be the key starting point)
- Green public procurement regulation (requires standard EN 13201 and recommends 4000 K)
- Municipal lighting plans (low quality, not comprehensive)

Regulation (2007) content and effects

- Roads, public surfaces, airports, ports, railways, production facilities, office buildings, institutions, facades, cultural monuments, protection of endangered species, advertising facilities, sports fields, construction sites
  - Road lighting: ULOR = 0, 44,5 kWh/resident/year
- Major advances, most of lighting in line with the Regulation
- Advent of LED lighting led to failure of 44,5 kWh cap
- Road lighting not addressed comprehensively
- Harmonization by 2017: possible to have led to increased road lighting proliferation

Major pollution sources (1)

- Rules on road design
  - Very extensive list of objects to illuminate: *„Lighting must be installed on roads in settlements, in canalized intersections, at junctions on long roads, at intersections of main and regional roads with main and regional roads outside settlements, at bus stops, in pedestrian corridors in the area of marked crossings or underpasses, on control stations, service stations, rest areas and service stations and car parks.“*
  - Oficially not valid any more and better forumulation in another legislation document, but still in use
- Slovenian Lighting Society recommendations
  - Defining design for particular types of objects; in line with CIE recommendations
  - Officially not valid any more, reference to standard EN 13201, but standard does not cover this level

Major pollution sources (2)

- Standard EN 13201
  - Officially only recommendation, but in most cases used as a „law“
  - Much too demanding for locations with low needs, e.g. for almost the whole countryside
  - Weak theoretical backgrounds, in any case the content only useful as orientation
  - Very relative and confusing criteria for selection of lighting classes
  - Not clear also when it could be used rationaly, e.g. most designers understand that the whole road must be illuminated and it‘s not possible to illuminate only the pavement

Major pollution sources (3)

- Reckless civilisational pressure on local roads
  - Systematic lighting of all possible settled places, regardless of the needs and (cumulative) negative effects
  - In a long term even Mayors can't stop anything without recommendations at national and international level
- European infrastructure funds
  - New EU member states receive funding from EU infrastructure funds, which has to be spent

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Systematically, extensively, intensively, strictly by the book on **state roads**

(National directorate for infrastructure)

(main difference compared

to Austria, Germany, Slovakia …)

Everywhere, regardless of the needs and cost/benefit ratio on **local roads** (municipalities)

(main potential for further spreading)

Using flat bottom luminaires with LED technology is not sufficient

We need limitations and recommendations on

allowed locations, spatial distribution, column height, brightness, light colour, column and luminaire shape

Bordeline questions

- When lighting outside settlements?
- Where even lighting and where only orientational?
- Height of poles in non-urban areas
  - Negative impacts on the appearance of landscape
  - Domination over settlements
  - Balance between EN 13201 requirements, energy consumption, LP requirements, aesthetics requirements
- Lighting only the pavement or the whole road? Height and spacing between lights on pavements through settlements
- …

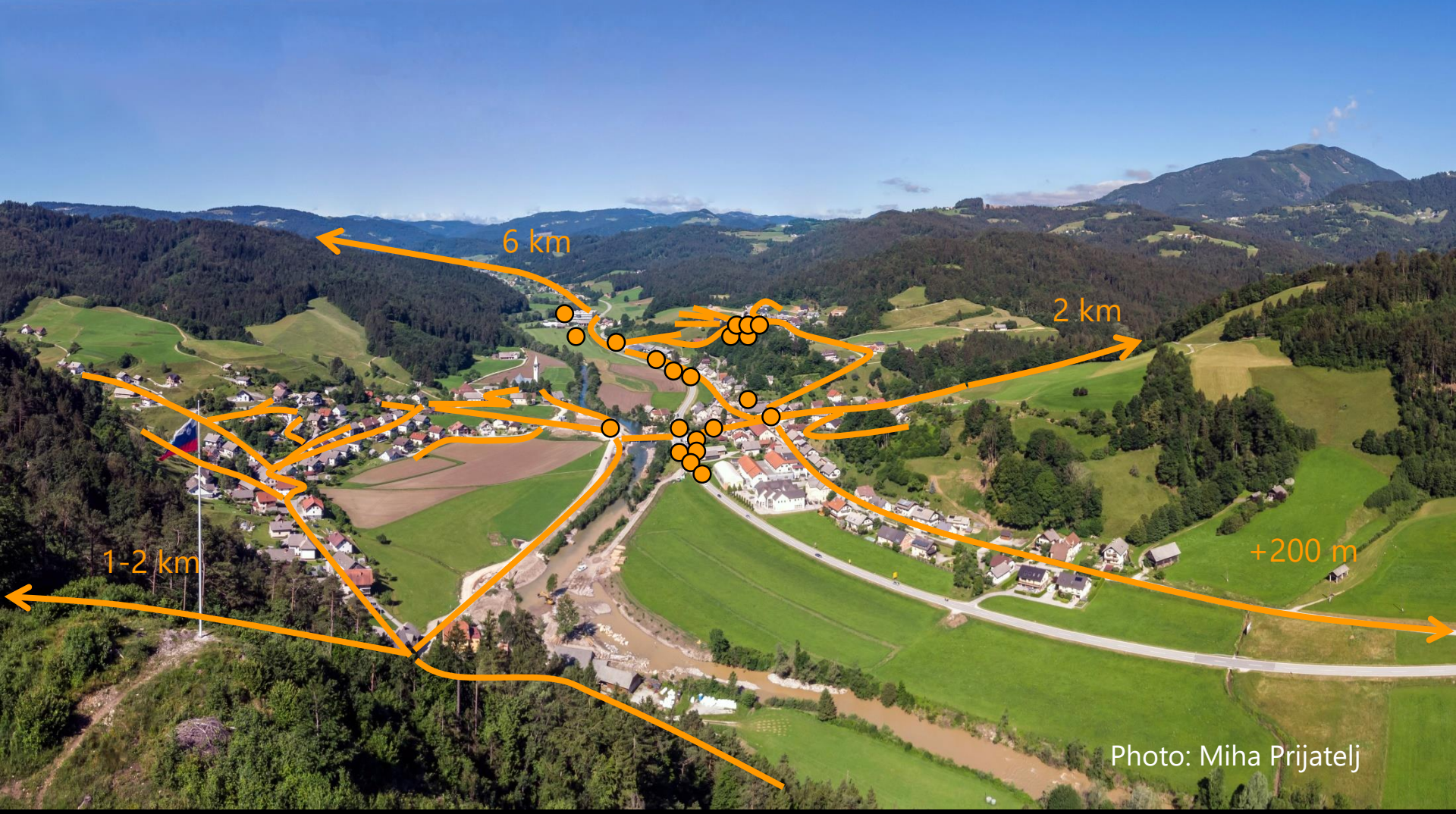
Until 2000: <10 lights;

1st stage: SECURITY and partly comfort;

main 3 crossroads and centrum

Y. 2020: 105 lights;

2nd stage: COMFORT and partly security, where this makes sense; mainly pavements and parking on the main axis; exaggerated projects



Y. 2050: 500 lights;

3rd stage: EXTREME COMFORT, which turns into its opposite;
total illumination of all streets in all villages, negligible needs

Photo: Aleš Šubic

Illumination of a simple turn-off ...

… plus a school turnaround

Photo: Andrej Mohar

… from another perspective

Light pollution

Photo: Aleš Šubic

Landscape degradation

Photo: Aleš Šubic


Not aesthetic
(6 m high, grey columns, no design)
Photo: Aleš Šubic

Photo: Aleš Šubic

What design for what location?

Decreased security/visibility

Lighting needed/acceptable?

Lighting needed/acceptable?

Lighting needed/acceptable?

Lighting needed/acceptable?

Lighting needed/acceptable?

Lighting needed/acceptable?

Environmentally sustainable?

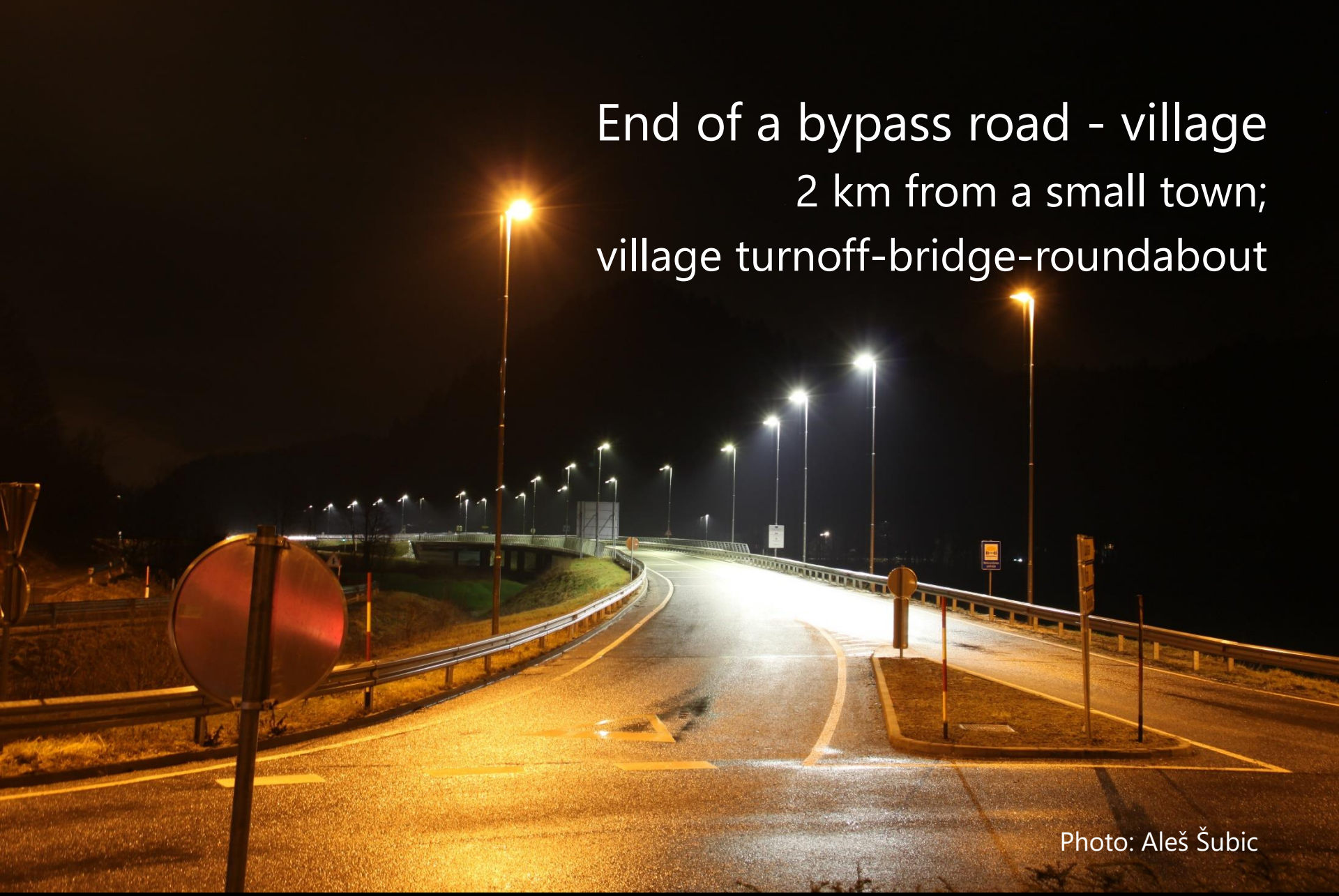
Do we need that height/need at all?

Really needed? Appropriate for this location?

Typical roundabout on regional (and connected) roads

Photo: Andrej Mohar

Needed that much?



Needed that much?

Only wrong design?

Typical Slovenian village

Photo: Aleš Šubic

Lower columns possible?

Needed that much?

Photo: Andrej Mohar

Needed that much?

Bus stop in an open field in front of a village

Photo: Andrej Mohar

Needed that much?

Needed that much?

Dispersed settlement (2 km)

For whom?

1 km, outside settlements

Sustainable?

Pedestrian pathway and cycling road

Photo: Andrej Mohar

Sustainable?

Where are the limits?

Where are the limits?

Photo: Morski HR (Croatia)

We are going into a direction of a total grid illumination of the whole country, with all settled places and connection roads between them being illuminated!

(Slovenia is dispersedly populated and settlements lie close together)

Mechanisms behind the road lighting act as a kind of a technical totalitarian system

A few people define the rules, which cannot be objected although they extensively affect the common space

Excessive impact of European rules (EN 13201) on local projects

Technical recommendations (e.g. EN 13201) with potentialy extensive negative influences must not be made mandatory!

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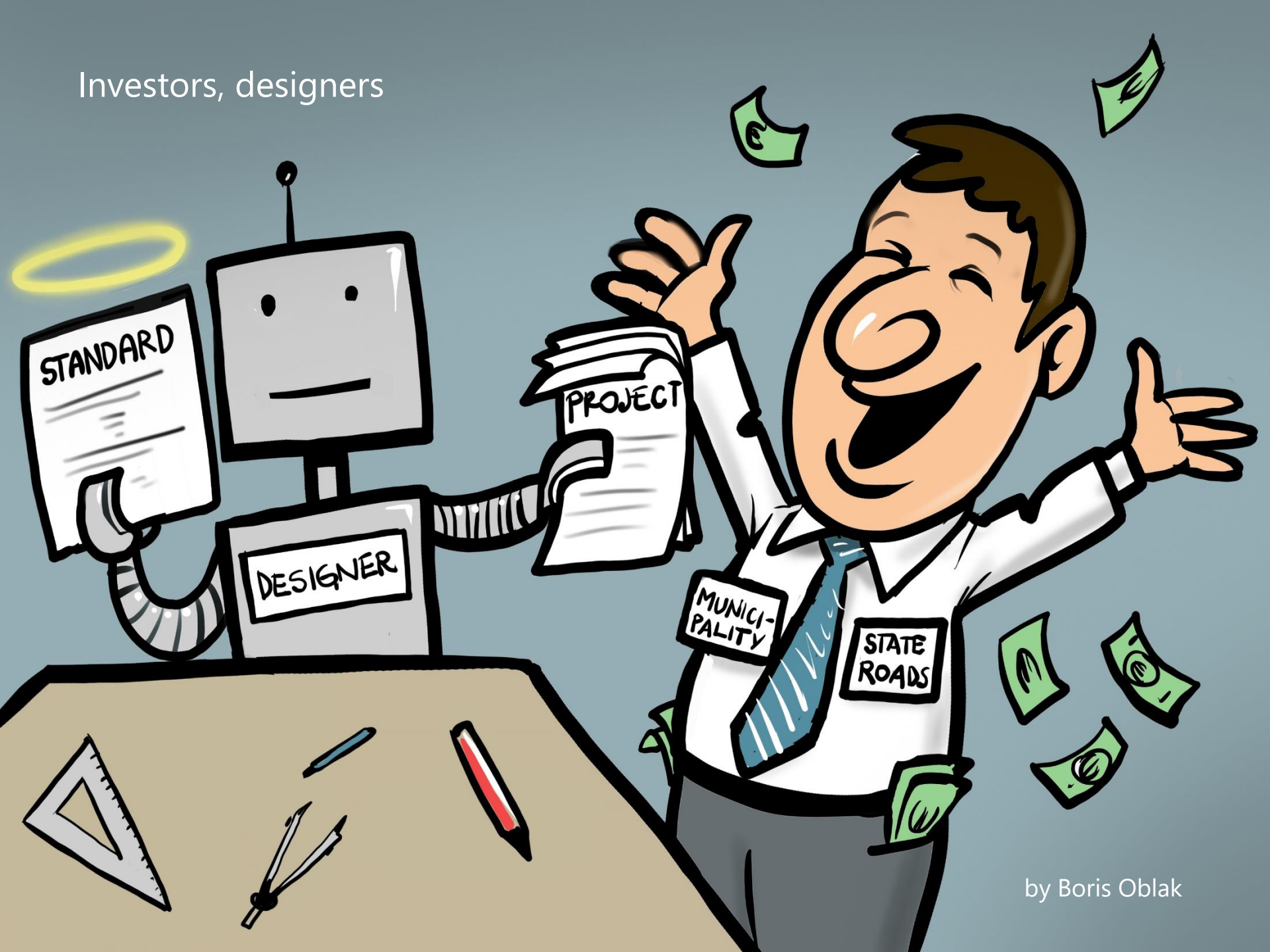
Investors, designers



by Boris Oblak

Foreseen illumination according to the „extremely rational version of the project“

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Levels of LP control

- Spatial planning policies
  - Where lighting is needed/not recommended/not allowed (cost/benefit and needs-based; night as a value)
- Cumulative limits: red-lines, target values, top-down approach
  - E.g. kWh/res./year or lumen/resident/year in Regulation
- Design rules for different types of road objects
  - Extent of illumination (e.g. 25, 4 or 0 lights per roundabout)
  - Where high uniformity and where only orientational
  - Spatial distribution and height of luminaires
- Optimisation of individual light sources
  - Light colour, optics, shields …; e.g. 4000 K is a past in Slovenia

Recommended policy

Purpose	Level of lighting acceptance
Direct use (work, service facilities, events, sports …)	Ok; respect limits
Traffic safety	Ok; in rational frames
Personal safety	Only if high enough needs
Comfort	Only if high enough needs, e.g. not in villages, except centres and high concentration areas; orientation lighting in some areas
Decoration (facades, surroundings of the buildings, parks, seaside promenades …)	Only in cities, except buildings/places of special importance

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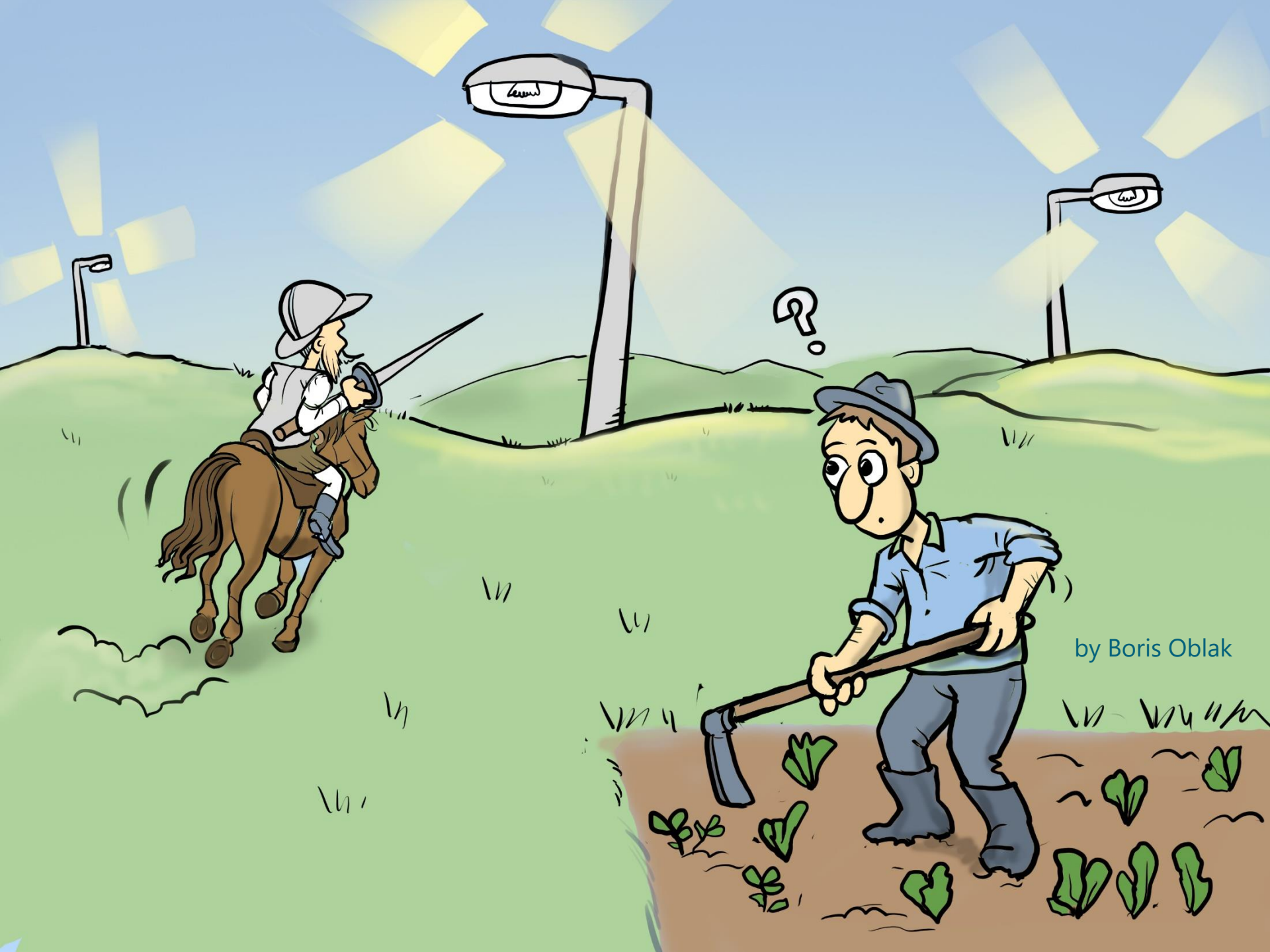
Ongoing and planned activities

- Revise Regulation on limit values for light pollution
- Revise Slovenian Lighting Society recommendations
- Write national specific 1st part of Standard EN 13201
- Enforce already existing changes in Rules on road design
- Define spatial planning legislation (starting with national strategy) and spatial planning oriented recommend.
- Revise Green public procurement regulation
- Revise and extend municipal lighting plans
- Educate professionals and general public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by Boris Oblak

Let the night be night!

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