



WEBINAR

# Light Pollution 2021

14/05/2021

EU GREEN WEEK 2021 PARTNER EVENT

**ZERO** #EUGreenWeek  
**POLLUTION**  
for healthier people and planet



Ministerstvo životního prostředí

Night Light  
vozemag Europe

G Slezské gymnázium  
Opava

CABILDO LA PALMA

ENLIGHTEN

BRNO  
UNIVERSITY  
OF TECHNOLOGY

# Welcome to the Webinar Light Pollution 2021

Please, mute your mic.



[www.sli.do](https://www.sli.do)



Event code:  
589609

Enjoy your meeting.



WebEx Teams  
videoconference  
14th May 2020

# PROGRAM

## 10:00 Opening and introduction

### CZECH REPUBLIC, MINISTRY OF ENVIRONMENT

Anna Pasková, Director of the Department of Environmental Policy and Sustainable Development

Michal Bareš, astronomer

What is light pollution?

What are the causes and effects of light pollution?

## 10:15 Night Light - Island Government of La Palma

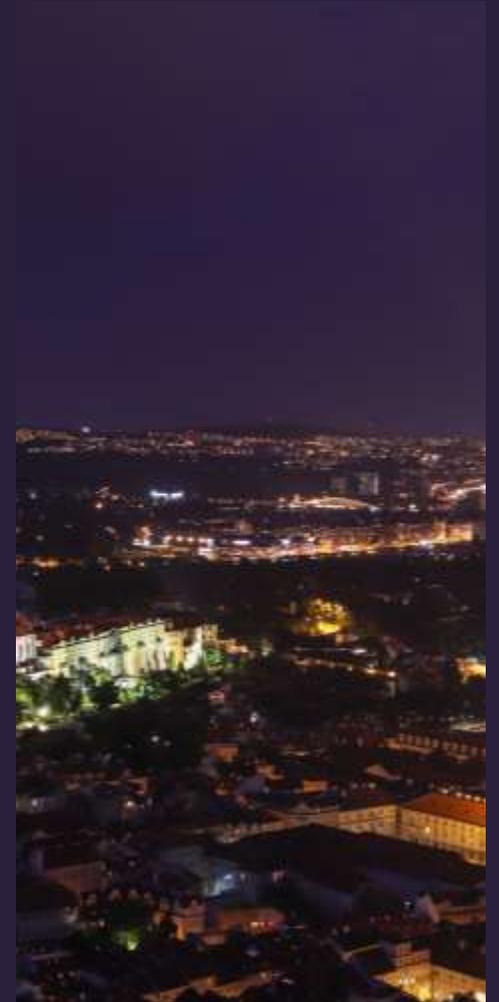
### INTERREG EUROPE PROJECT

Ana Castañeda Pérez, head of the general section of the Cabildo de La Palma Tourism Service

Improving regional policies to reduce light pollution and protect and valorise dark night.

How protecting the sky from light pollution can help the economic development of a rural area through

the activity of astronomical and scientific tourism.



# PROGRAM

## 10:35 Emissions projects

### THE SILESIA GRAMMAR SCHOOL

Anna Beck, student; Michal Jedlička, Deputy mayor of the city of Opava

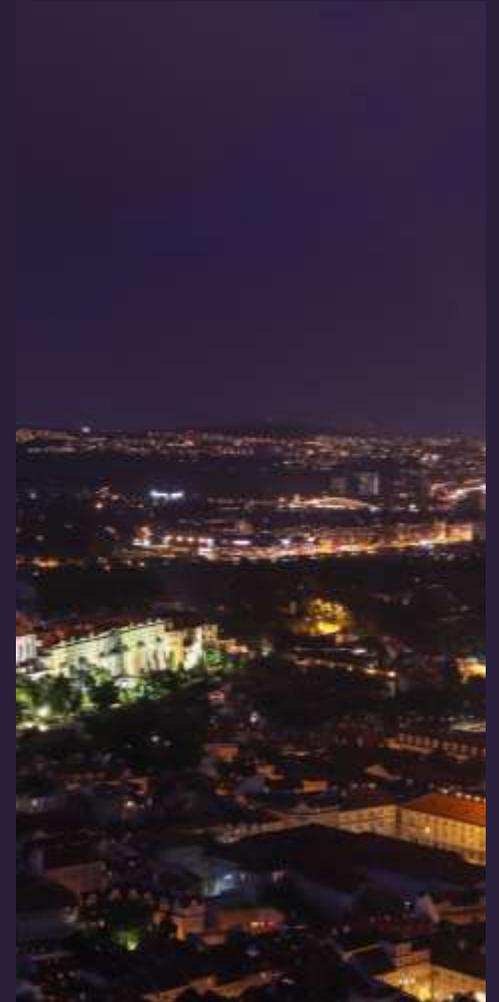
A group of students from the Silesian Grammar School, the city of Opava interested in environmental science and positive impact of people on the environment. Since 2018, they have been working to research and address the issue of light pollution. A good example of a bottom up approach and a citizen / student of science.

### A JOINT PROJECT OF SCIENTISTS AND THE MUNICIPALITY

Petr Baxant, Associate professor – FEEC, UEEN

Even after the public lights go out, the city is full of lights - advertising banners, lamps along the railway tracks or warning lights on skyscrapers.

## 10:55 Fade to Black in Brno



# PROGRAM

**11:15 ENLIGHTENme**

## EU RESEARCH PROJECT, HORIZON 2020

Simona Tondelli, full professor of Urban and Regional Planning in the Department of Architecture, UNIBO

Presentation of the new research project ENLIGHTENme – Innovative policies for improving citizens' health

and wellbeing addressing indoor and outdoor lighting the effect urban lighting..

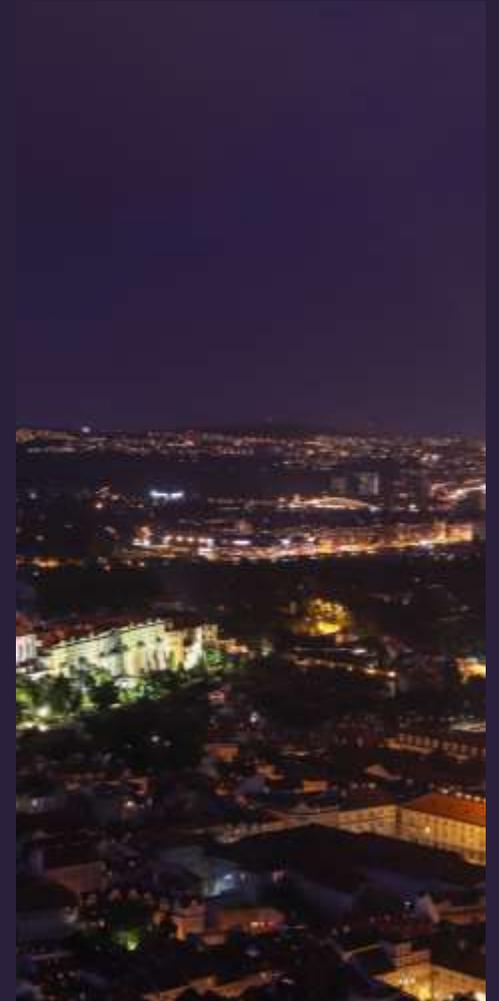
## Discussion

**11:35 Discussion**



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# Light pollution and the vanishing night

Michal Bareš  
Czech Astronomical Society



# Light pollution

Disturbance of the night environment with artificial light

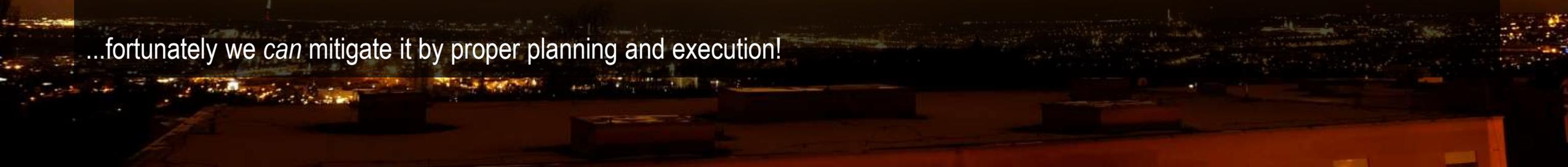
Any adverse effects of artificial lighting

Economic costs, negative ecological and health consequences

Light pollution inevitably accompanies all (exterior) artificial lighting...

- Streetlights
- Advertising, billboards, skybeamers
- Exterior lighting of factories, warehouses, shopping centers
- Ports, railways, parking lots...
- Sports, stadium lighting
- Illumination of buildings and monuments
- Interior lighting escaping the buildings (greenhouses, offices, houses)

...fortunately we *can* mitigate it by proper planning and execution!







# Light trespass

External lighting illuminating interiors through windows

Light source illuminating surrounding areas that should not be illuminated



# Glare

Light shining horizontally into observer's eyes  
Excessive amount of bright light sources  
Billboards, misdirected industrial and street lighting



# Disturbance of ecosystems

Majority of all species are nocturnal!

Predator-prey balance

Behavioral changes, shift of temporal and spatial activity



# Disturbance of ecosystems

Migration of birds, collisions with illuminated buildings

ALAN fatally attractive to insects

Nesting of sea turtles

Habitats of bats, aquatic organisms and more...



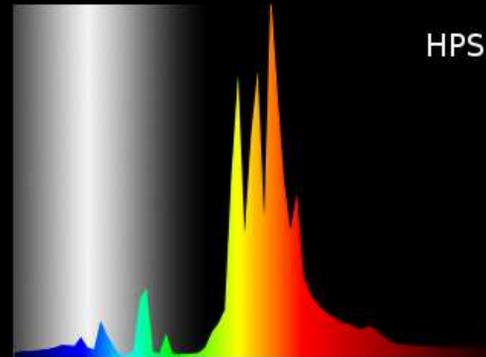
# Health risks

Unwanted light is irritating and stressful

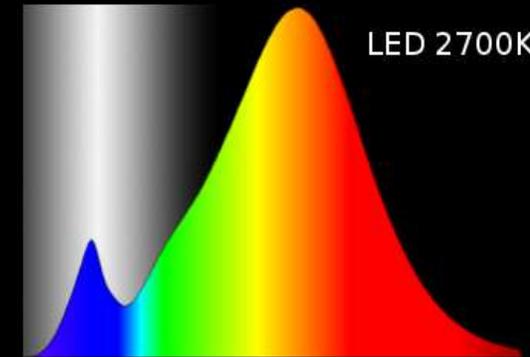
Exposure to ALAN cause

- Sleep disorders
- Circadian rhythm disruption
- Tiredness, reduced performance
- Physical and mental disorders
- Risk factor for cancer development

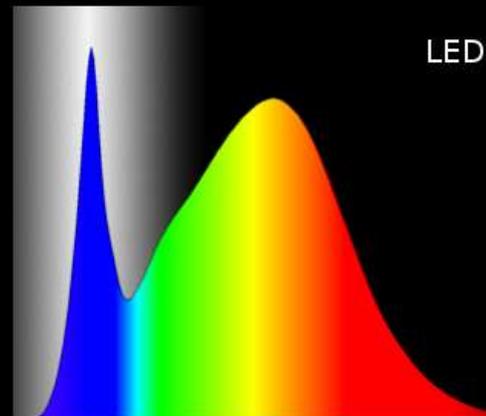
Color matters! Blue vs yellow/orange light



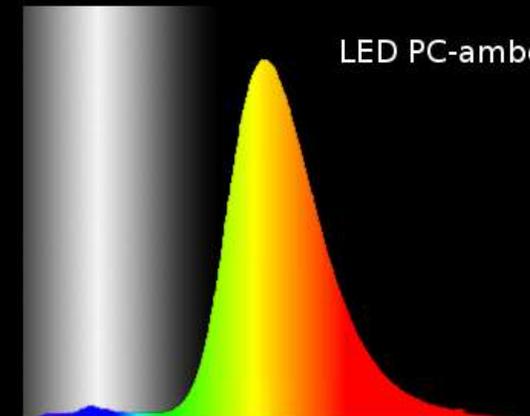
HPS



LED 2700K



LED 4000K



LED PC-amber

# Skyglow and nightscapes

Artificial light scattered in the air and reflected off the clouds brightening the night sky

Strong individual sources, cities, far reaching (100's km)



# Skyglow and nightscapes

Visibility of stars and other night sky phenomena is severely limited

Major issue for both professional research and casual stargazers



# Are there still any dark places left?

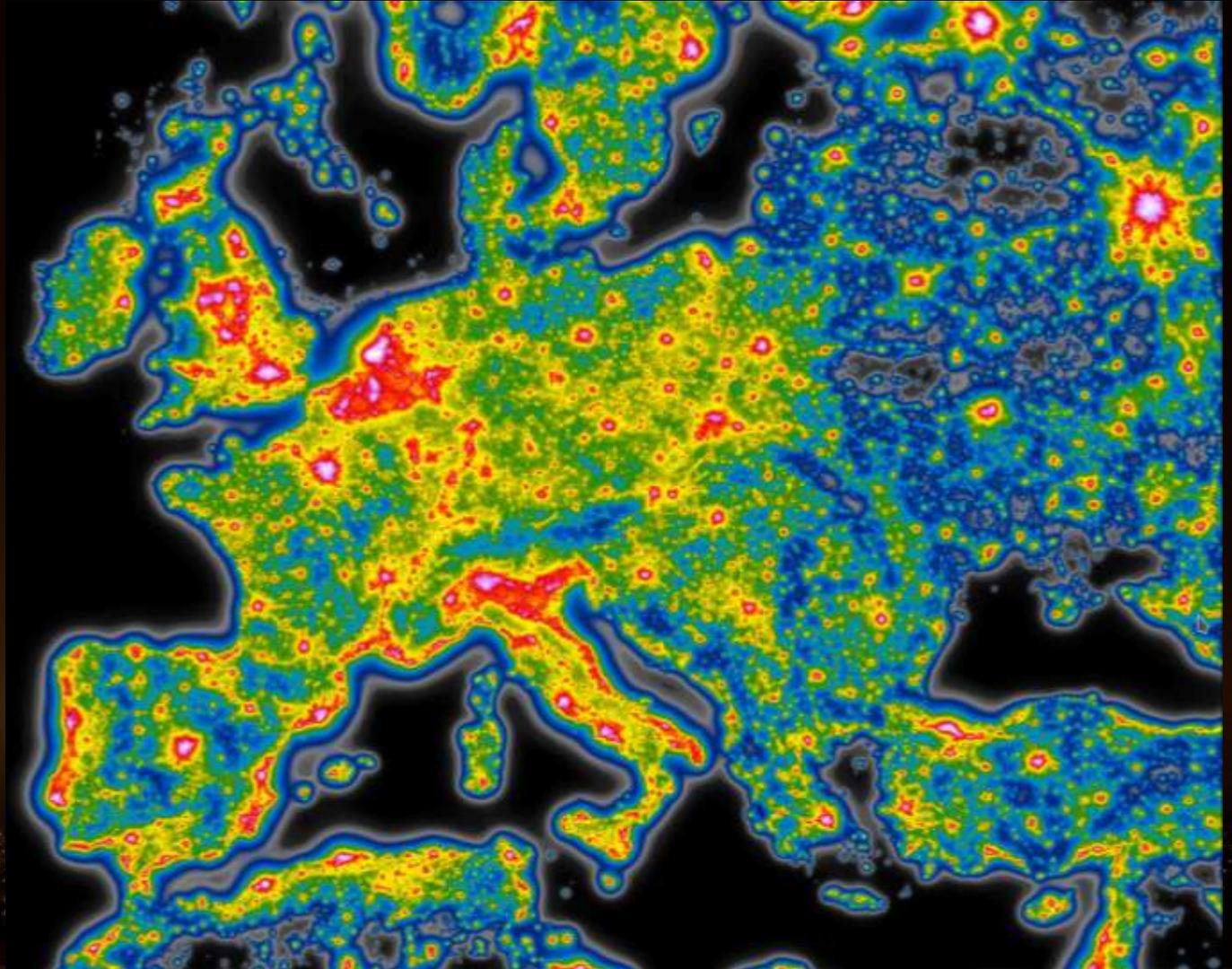
Natural darkness has become  
a scarce resource

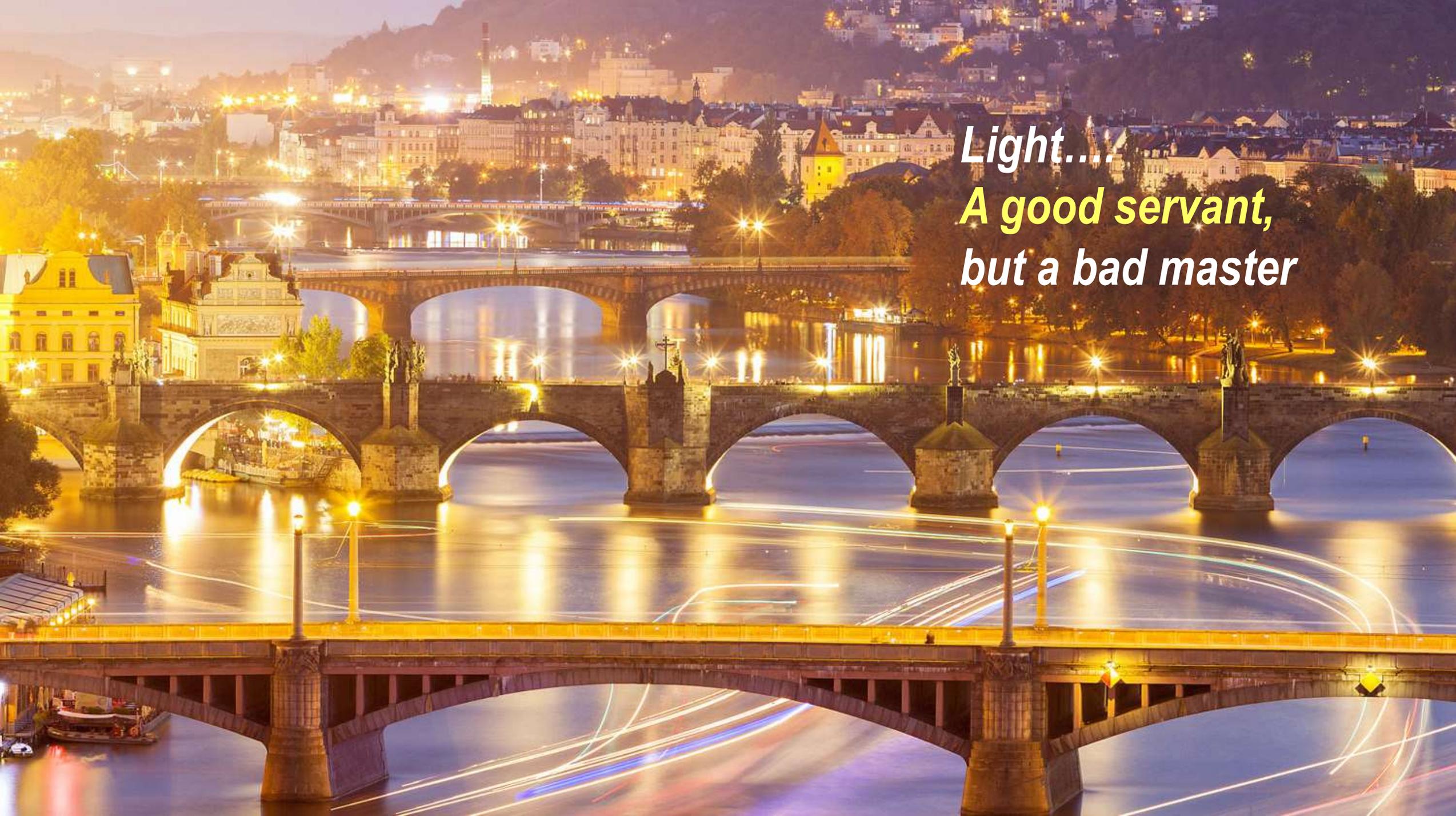
Majority of EU population has little  
chance to experience true night

Light pollution is adding to the pressure  
of human civilization on the nature

Remaining dark places are fragile

**Night time environment needs  
and deserves to be protected!**



A long-exposure photograph of the Charles Bridge in Prague at night. The bridge's stone arches and pillars are illuminated with warm yellow lights, which reflect on the water below. The water is filled with vibrant light trails from passing vehicles, creating streaks of white, blue, and red. In the background, the city of Prague is visible, with its buildings and streets lit up, and a hillside with more houses and a church spire under a dark sky. The overall scene is a blend of historical architecture and modern urban light pollution.

*Light....  
A good servant,  
but a bad master*

# Experiences from the Czech Republic

2/2017 Interministerial working group on Light Pollution

7/2017 I. Information to the Government

3/2018 II. Document – Action Plan on light pollution (Government Resolution No. 185/2018)

Act no. 114/1992 Coll., on Nature and landscape protection - So far no specific law on light pollution

5/2020 International webinar focused on light pollution - "Workshop on Light Pollution 2020,,

6/2020 EIA - methodological instruction for authorised persons

9/2020 Public hearing in the Senate - negative effects of light pollution

?/2022 **Technical standards**

?/2023 **Building Act**



# Subsidy scheme - Public Lighting Renovation

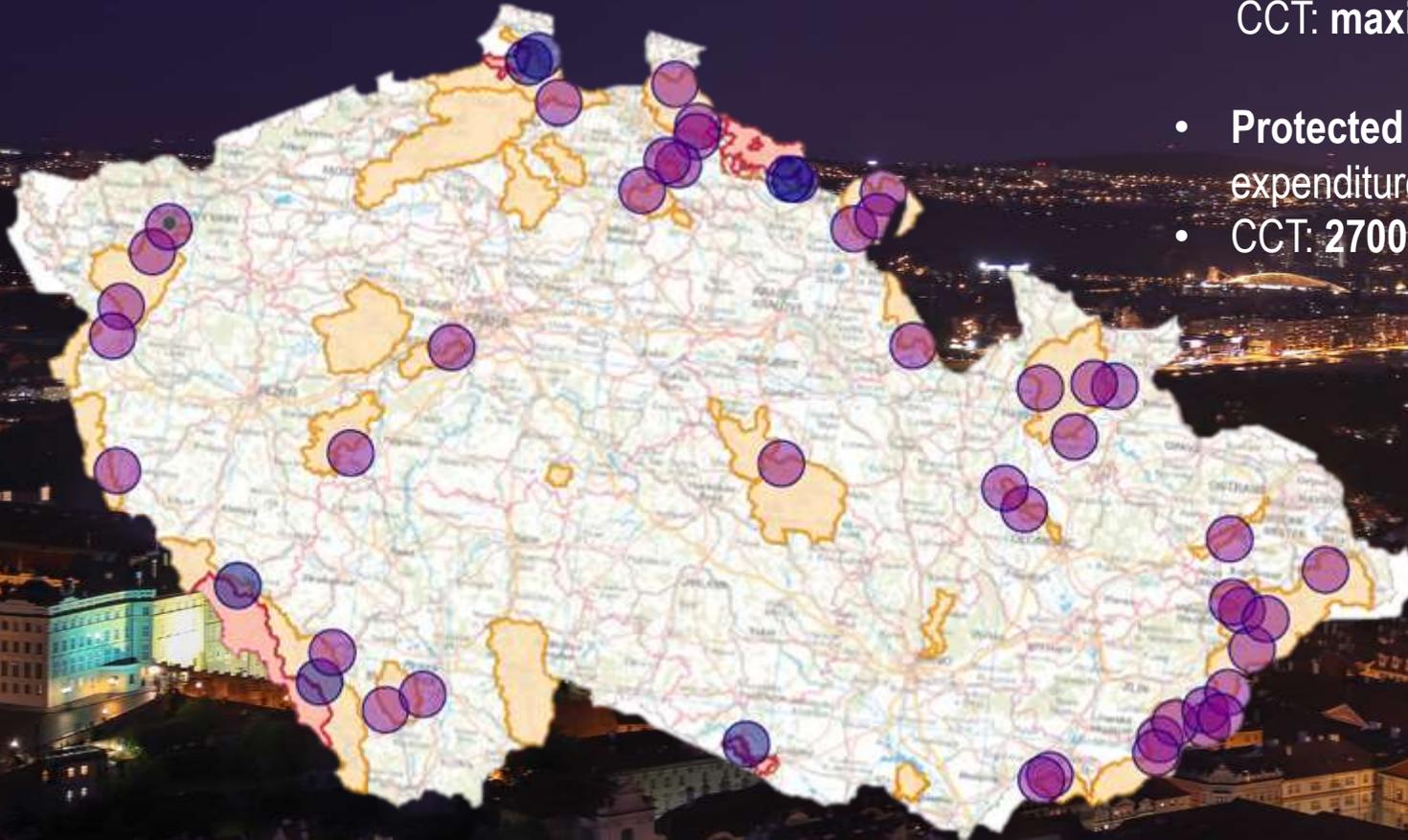
2017 – National Parks (NP)

2018; 2019; 2020 – NP and Protected Landscape Areas

2018; 2019; 2020 – Other Areas

2021+ – RRF / Mod Fond

- ULOR = 0 %;
- The level of lighting or brightness of the road must not exceed the values required by the ČSN EN 13201 standard by more than 30%;
- **National Parks = 85 % of eligible expenditure**  
CCT: maximum 2700 K
- **Protected landscape and other areas = 50 % of eligible expenditure**
- CCT: 2700 K and lower = bonus



## Simply Lighting Guide

- **Light pollution as a topic**
- State Environmental Policy 2030
- European level
- International debate:
- CIE standards / biodiversity protection



Thank You For Your Attention

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