



REPUBLIC of CROATIA
Ministry of Economy and
Sustainable Development

Light pollution in the legislation of the Republic of Croatia

Ministry of Economy and Sustainable Development

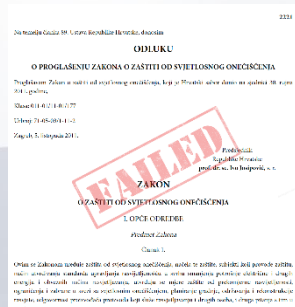
Damir Bartolić, Senior Expert Adviser

<https://mingor.gov.hr>



Introduction to Legislation

- Predecessor:
 - Act on Protection against Light Pollution (OG 114/11)
 - Developed during 2008-2016 recession with Energy efficiency in mind
 - Failed to take root due to a number of factors





Introduction to Legislation

- Ministry had developed a structure concept
- The Working group for drafting the Legislation was appointed with members from Administrative bodies, Standards Institute, Chamber of Economy, Chamber of Trades and Crafts, Health Chamber, Employers Association, Astronomical Association and NGOs
- The draft proposal was prepared and consultations both with the public and administrative bodies were carried out



Introduction to Legislation

- Act on Protection against Light Pollution (OG 14/19)
 - Ordinance on **lighting zones, permitted lighting values** and methods of managing lighting systems (OG 128/20) – in force since 2020
 - Ordinance on the content, format and drafting the **lighting plan and action plan** for the construction and/or reconstruction of outdoor lighting – in adoption process
 - Ordinance on **measurement** and monitoring of environmental lighting - in adoption process



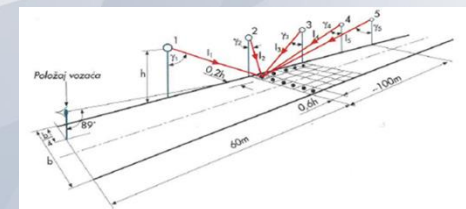
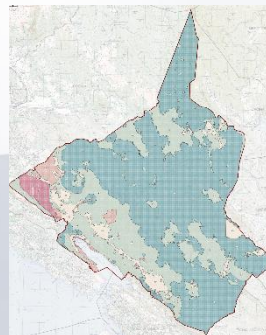
Act on Protection against Light Pollution (OG 14/19)

Ordinance on lighting zones, permitted lighting values and methods of managing lighting systems (OG 128/20)

Ordinance on the content, format and drafting the lighting plan and action plan for the construction and/or reconstruction of outdoor lighting

Ordinance on measurement and monitoring of environmental lighting

ŠIFRA	NAZIV	PREMDIO	SAŽETAK
10	Prostorni planovi osvetljenosti	Plan osvetljenosti je prostorni plan koji određuje područja osvetljenosti, vrstu i intenzitet osvetljenosti, te metode upravljanja osvetljenosti. Plan osvetljenosti mora biti usklađen s prostornim planom i drugim prostornim planovima. Plan osvetljenosti mora biti usklađen s zahtjevima ovog Zakona i drugih propisa koji se odnose na zaštitu okoliša i zdravlje ljudi.	Plan osvetljenosti je prostorni plan koji određuje područja osvetljenosti, vrstu i intenzitet osvetljenosti, te metode upravljanja osvetljenosti. Plan osvetljenosti mora biti usklađen s prostornim planom i drugim prostornim planovima. Plan osvetljenosti mora biti usklađen s zahtjevima ovog Zakona i drugih propisa koji se odnose na zaštitu okoliša i zdravlje ljudi.
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Act on Protection against Light Pollution (OG 14/19)

- Exemptions:
 - Energy and production facilities
 - Mitigation natural disaster / large accident Safety lighting under different regulations
 - Military, defences and security activities
 - Lighting for protected person and protected buildings
 - Air, Road, Rail, Maritime signalling lights
 - Public gas lighting





Ordinance on lighting zones, permitted lighting values and methods of managing lighting systems (OG 128/20)

- Defines:
 - Curfew – a time interval at night during which outdoor lighting is turned off or reduced to a prescribed appropriate level and is determined within the Lighting Plan
 - Curfew can deviate by a maximum of one hour from the middle of the night (night is determined as the time interval between the sunset and dawn)



Ordinance on lighting zones, permitted lighting values and methods of managing lighting systems (OG 128/20)

ZONE	DESIGNATION	CIRCUMSTANCES
E0	Areas with natural illumination	Proximity to major professional observatories Dark Sky Parks Natural areas of open space Nature areas outside the boundaries of settlements important for the preservation of wild species sensitive to light pollution, with special emphasis on strictly protected species Protected areas - Strict reserves, special reserves and zones of strict and targeted protection within nature parks and national parks Shelters for wild species Parts of landscape and landscape infrastructure
E1	Dark landscape areas	Rural and urban areas and areas with limited night activity Buildings within natural areas of open space Unclassified local roads, mostly unlit Protected areas outside the of the settlement boundaries except protected areas in E0 Protected areas within the settlement borders crucial for strictly protected species Shelters and habitats of wild species sensitive to light pollution within settlements
E2	Areas of low ambient illumination	Construction sites of the settlements Residential zones Protected areas except in zones E0 and E1 Activity zones within nature parks and national parks Protected areas within the settlement boundaries
E3	Areas of medium ambient illumination	Individual industrial and commercial zones segregated from the settlement areas Industrial and commercial zones within the settlements Infrastructure from transport
E4	Areas of high ambient illumination	Urban commercial areas with a high intensity of night activity



Ordinance on lighting zones, permitted lighting values and methods of managing lighting systems (OG 128/20)

ANNEX II.

A. Limit values of vertical illuminance at building openings

Table 2.a Maximum levels of vertical illuminance (FL) at openings (doors, windows) of neighbouring buildings

Description	Part of night	Illumination zone				
		E0 (lx)	E1 (lx)	E2 (lx)	E3 (lx)	E4 (lx)
Vertical illumination	before curfew	0,5	1	2	3	8
	during curfew	0	0	0,5	1	2

ANNEX IV.

Table 8. Maximum permissible brightness values of billboards or advertising media/screens

**implied operation during the night*

Type of billboard or media	Permissible lamp position/light direction	Illumination zone			
		E0	E1	E2	E3 - E4
with external lamps	On the top edge / down	0 cd/m ²	0 cd/m ²	10 cd/m ²	20 cd/m ²
with internal lamps and static lighting	Individual inner source	0 cd/m ²	0 cd/m ²	5 cd/m ²	20 cd/m ²
Digital screens*	Individual inner source	0 cd/m ²	0 cd/m ²	0 cd/m ²	20 cd/m ²



Ordinance on the content, format and drafting the lighting plan and action plan for the construction and/or reconstruction of outdoor lighting

- Closely related to Spatial planning and Ordinance on zones
- Defines:
 - Content, format and method of drafting Lighting Plans and Action Plans for the construction or reconstruction of outdoor lighting, method of informing the public about (**the Plans**) and Action Plans, method of submitting data for the needs of the Environmental Protection Information System



Ordinance on lighting zones, permitted lighting values and methods of managing lighting systems (OG 128/20)

Illumination Plan of Bakar

Trial Plan

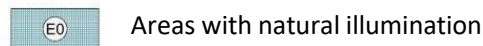
Map symbol



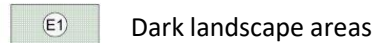
City boarder

Illumination zones

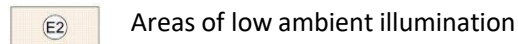
(according to Ordinance on illumination zones classification)



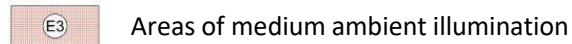
Areas with natural illumination



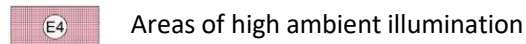
Dark landscape areas



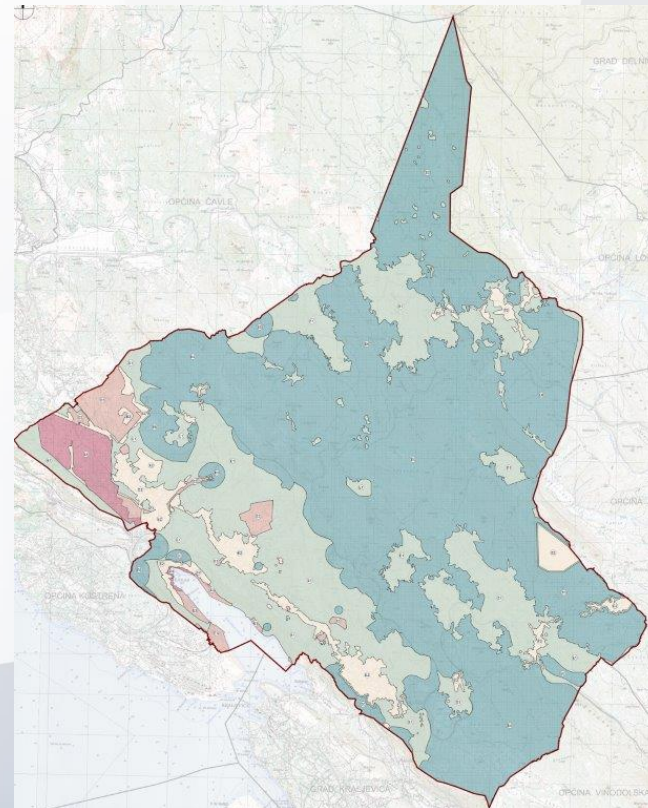
Areas of low ambient illumination



Areas of medium ambient illumination



Areas of high ambient illumination





Ordinance on measurement and monitoring of environmental lighting

- Defines:
 - the method of measuring environmental illuminance, the content and method of creating a report on the carried out measurement, and the method of measurement to determine the level of illuminance
- Public consultations 18 May – 17 June 2022
- Expected to come into force within November 2022





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Thank you for your
attention