

Supplementary Materials:

Table S1: A selection of norms, decrees and laws demonstrates that there is a diverse range of policy, a diverse range of actors and expertise, different sizes, and different ways of accomplishing the goals. Legislation to limit outdoor light began several decades ago in communities near astronomical observing sites, but it is only recently that regional (e.g. Italian provinces like Lombardy) and national laws (Slovenia 2007, France 2013) have come into effect.

<i>Country, Region, City</i>	<i>Name, type</i>	<i>Year</i>		<i>Measures</i>	<i>Regulated type of light</i>	<i>Impetus</i>
USA, Arizona, Flagstaff ¹	ordinance	1958	city	search light embargo	searchlights	dark sky protection close to astronomical observatories
USA, Arizona, Flagstaff ²	code	1989/2011	city	lumen/acre	street lighting	dark sky protection close to astronomical observatories
Switzerland, Lucerne ³	illumination concept	2008	city	lighting level, switch-off at 23:00, CCT = 3000 K no color lighting	facade illumination, shop lighting, street lighting	lighting design, environmental protection, energy consumption reduction
Germany, Berlin ⁴	decree	2010	city	reduced lighting intensity, warm white light, switch-off 00:00 of facade illumination	street lighting facade illumination	lighting design, environmental protection, reduction CO ₂ emissions, energy consumption reduction, road safety
Canada, Alberta, Calgary ⁵	bylaw	2002/2008	city	lower wattage, downward lighting	street lighting	energy consumption reduction, glare reduction, light pollution reduction
Italy, Lombardia ⁶	law	2000	province	full cut-off fixtures, luminances < 1 cd/m ² , 30% reduction at 00:00	street lighting,	dark sky protection close to astronomical observatories , energy consumption reduction
Spain, Canary Island La Palma ⁷	decree	1988	province	full cut-off fixtures blue light <15%	outdoor lighting	dark sky protection close to astronomical observatories
Spain, Andalusia ⁸	decree	2007	province	zonification, ULR<1% in E1	street lighting	environmental and landscape protection, dark sky protection close to astronomical observatories
Italy, Alto Adigio ⁹	law	2011	province	inventory, full cut-off fixtures reduction 00:00-06:00, luminances < 2 cd/m ² CCT < 4000 K	street lighting, facade illumination, sports lighting	environmental and landscape protection, energy consumption reduction
Slovenia ¹⁰	decree	2007	national	full cut-off fixtures, < 50 kWh/inhabitant	street lighting facade illumination	dark sky protection, energy consumption reduction
France ¹¹	decree	2012	national	switch-off at 01:00-06:00	advertising lighting	energy consumption reduction, reduction CO ₂ emissions
France ¹²	decree	2013	national	switch-off at 01:00 1 h after office usage	facade illumination office illumination	energy consumption reduction, reduction CO ₂ emissions
Germany, light immission regulation ¹³	recommendation	1993	regional	< 1 lux on dormitory window	room brightening (through non-public lighting)	light immission reduction

European Union ¹⁴	norm	2003 2013 (proposal)	trans- national	minimum illuminance and luminance values, homogeneity criteria, maximum values proposed	street lighting	road safety, standardization
European Union ¹⁵	Ecodesign directive	2009	trans- national	energy efficiency	street lighting, domestic lighting	energy consumption reduction, reduction CO2 emissions
Council of Europe member states ¹⁶	resolution	2010	trans- national	quantification and reduce light pollution	outdoor lighting	environmental protection, dark sky protection, energy consumption reduction

¹ <http://www.flagstaffdarkskies.org/international-dark-sky-city/flagstaffs-battle-for-dark-skies/>

² Flagstaff Lighting Code, 2011, http://www.nofs.navy.mil/about_NOFS/staff/cbl/Flagstaff.LC.2011.pdf

³ Plan Lumière-Das Beleuchtungskonzept für die Stadt Luzern, Mai 2008,

http://www.stadtluzern.ch/de/aktuelles/projekte/projekteaktuell/?action=showthema&themenbereich_id=16&thema_id=115

⁴ Stadtbild Berlin, Lichtkonzept, Feb. 2011. <http://www.stadtentwicklung.berlin.de/bauen/beleuchtung/de/lichtkonzept.shtml>

⁵ EnviroSmart streetlight retrofit, 2002-2005, <http://www.calgary.ca/Transportation/Roads/Pages/Traffic/Traffic-signals-and-streetlights/Enviro-smart-streetlight-retrofit/EnviroSmart-streetlight-retrofit.aspx>

Land use bylaw, 2008, http://www.calgary.ca/PDA/DBA/Documents/Calgary-Land-Use-bylaw-1P2007/bylaw_1p2007.pdf

⁶ Regione Lombardia, Legge Regionale N. 17: Misure urgenti in tema di risparmio energetico ad uso di illuminazione esterna e di lotta all'inquinamento luminoso, 27 marzo 2007,

<http://consiglionline.lombardia.it/normelombardia/accessibile/main.aspx?view=showpart&selnode=lr002000032700017&idparte=lr002000032700017>

⁷ Ley sobre Protección de la Calidad Astronómica de los Observatorios del IAC (Ley 31/1988 del 31 de octubre) BOE Num 264 de 3 de noviembre de 1988

<http://www.iac.es/servicios.php?op1=28>

⁸ Protección del Cielo Nocturno, Decreto 357/2010, de 3 de agosto 2010,

[http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.30d4b35a97db5c61716f2b105510e1ca/?vgnnextoid=078259cdd5405110VgnVCM100000624e50aRCRD&vgnnextchannel=3fbd414cc389210VgnVCM10000055011eacRCRD&lr=lang_es \(law\)](http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.30d4b35a97db5c61716f2b105510e1ca/?vgnnextoid=078259cdd5405110VgnVCM100000624e50aRCRD&vgnnextchannel=3fbd414cc389210VgnVCM10000055011eacRCRD&lr=lang_es (law))

[http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.30d4b35a97db5c61716f2b105510e1ca/?vgnnextoid=f58581675e8aa210VgnVCM100001325e50aRCRD&vgnnextchannel=3fbd414cc389210VgnVCM10000055011eacRCRD&lr=lang_es \(decrete\)](http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.30d4b35a97db5c61716f2b105510e1ca/?vgnnextoid=f58581675e8aa210VgnVCM100001325e50aRCRD&vgnnextchannel=3fbd414cc389210VgnVCM10000055011eacRCRD&lr=lang_es (decrete))

⁹ Approvazione dei criteri per le misure di contenimento dell'inquinamento luminoso e per il risparmio energetico, Bollettino Ufficiale n. 31/I-II del 31/07/2012

<http://www.provincia.bz.it/agenzia-ambiente/energia/inquinamento-luminoso.asp>

¹⁰ 4162. Uredba o mejnih vrednostih svetlobnega onesnaževanja okolja Na podlagi tretjega in petega odstavka 17. člena Zakona o varstvu okolja (Uradni list RS, št. 39/06 – uradno prečiščeno besedilo, 49/06 – ZMetD, 66/06 – odl. US in 33/07 – ZPNačrt) izdaja Vlada Republike Slovenije U R E D B O o mejnih vrednostih svetlobnega onesnaževanja okolja, German translation: http://www.wua-wien.at/home/administrator/components/com_astatspro/getfile.php?id=105

¹¹ Décret n° 2012-118 du 30 janvier 2012 relatif à la publicité extérieure, aux enseignes et aux préenseignes,

http://www.legifrance.gouv.fr/affichTexte.do;jsessionid=3FF25512A55E385C6AACF9AD92AA2A66.tpdjo05v_2?cidTexte=JORFTEXT000025240851&categorieLien=id

- ¹² Arrêté du 25 janvier 2013 relatif à l'éclairage nocturne des bâtiments non résidentiels afin de limiter les nuisances lumineuses et les consommations d'énergie, <http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000027003910&fastPos=1&fastReqId=1850617855&categorieLien=id&oldAction=rechTexte>
- ¹³ Bund/Länder - Arbeitsgemeinschaft für Immissionsschutz: Hinweise zur Messung, Beurteilung und Minderung von Lichtimmissionen, 2012, http://www.lung.mv-regierung.de/dateien/laerm_licht_neu.pdf
- ¹⁴ CEN EN 13201-2: Road lighting - Part 2: Performance requirements (2003), <http://esearch.cen.eu/esearch/Details.aspx?id=11052965>
- ¹⁵ Commission Regulation (EC) No 244/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009R0244:EN:NOT>
- ¹⁶ Noise and light pollution, Parliamentary Assembly Council of Europe Resolution 1776 (2010), <http://assembly.coe.int/Main.asp?link=/Documents/AdoptedText/ta10/ERES1776.htm>