LIGHTINGEUROPE
THE VOICE OF THE LIGHTING INDUSTRY

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Unlocking the Potential of Smart Lighting: Including Luminaire Manufacturing in the EU Taxonomy's Climate Delegated Act

Our request in a nutshell

LightingEurope believes that it would be beneficial for both the environment and the industry if manufacturing of controllable LED-based luminaires - for both indoor and outdoor applications, such as road lighting, pedestrian and cycle lane lighting, among others - were explicitly mentioned as an enabling activity for Taxonomy Climate Change Mitigation and Adaptation.
Such inclusion would incentivise the market to accelerate the transition to smart lighting solutions, driving substantial energy savings. It would also ensure fair conditions for manufacturers of all efficient lighting equipment.

Introduction

In its current version, the Delegated Act of the EU Taxonomy, which establishes the Technical Screening Criteria (TSC) for determining when an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation, only partially covers the manufacturing of lighting products under activity "3.5. Manufacture of energy efficiency equipment for buildings". Specifically, in this section the manufacturing of light sources and of presence and daylight controls for lighting systems are explicitly mentioned among the economic activities that can be Taxonomy aligned.

The current wording in the Regulation, as described above, does not provide full clarity on the classification of the manufacturing of all lighting products in the EU Taxonomy for climate change mitigation and adaptation purposes, which has created some uncertainty in the market.

This paper explains the reasons why we recommend explicitly recognising the manufacturing of controllable LED-based luminaires as an enabling activity under the Taxonomy Climate Change Mitigation and Adaptation. It also includes our proposed amendments to the legislative act.

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Luminaires as key enablers of efficient safe lighting solutions

According to the IEC definition (IEC 60050-845:2020), a luminaire is an “apparatus which distributes, filters or transforms the light transmitted from at least one source of optical radiation and which includes, except the sources themselves, all the parts necessary for fixing and protecting the sources and, where necessary, circuit auxiliaries together with the means for connecting them to the power supply”.
In simpler terms, the combination of control gear and light source can be compared to a car engine, while the luminaire serves as the vehicle itself. Just as an engine without a vehicle is incomplete for its intended use, a light source without a luminaire cannot fully deliver its intended application, while fulfilling all safety requirements.
Luminaires can be designed to hold one or multiple lamps (with a socket, e.g. E27), or be designed with an integrated light source (such as an LED module). In both cases, luminaires play a fundamental enabling role in delivering energy-efficient light well beyond mechanical mounting, and thus substantially contribute to the effective energy consumption of lighting.
In addition to this, luminaires support and enable energy efficiency by hosting tools and instruments for lighting control systems, such as occupancy/motion sensors, photosensors, dimming actuators and dimmers, timers and energy meters.

Ensuring clarity and fairness for the European lighting manufacturing industry

Luminaires represent the finished product that most consumers purchase and constitute the largest portion of the lighting manufacturing industry in Europe.
The total value of the European lighting market, in terms of revenues of European lighting supplier companies, was approximately €22.2 billion in 2024, of which 89% (€19.9 billion) came from the sales of luminaires. [CSIL, The European Market for Lighting Fixtures 2025].
To ensure that the most significant portion of the European lighting manufacturing industry can benefit from the EU Taxonomy, it is essential to explicitly mention luminaire manufacturing as an activity under the framework. The current lack of clarity bears a risk of creating an unfair disadvantage for companies manufacturing luminaires, which are not explicitly covered by the existing Taxonomy criteria.

Unlocking the full potential of “Controllability” in lighting

The European lighting industry has undergone a substantial transformation over the past decades, primarily driven by the introduction of LED technology and the implementation of Ecodesign measures and RoHS restrictions.
Today, almost all lighting products sold in Europe are LED-based. This shift has resulted in significant energy savings and increased product lifetimes.
In 2022 alone, the lighting sector contributed to 187 TWh of primary energy savings, a significant achievement in Europe’s overall energy efficiency efforts [Ecodesign Impact Accounting 2023].
However, while the lighting industry has largely transitioned to LED products, the installed base is still halfway through the transition to LED lighting. Fully converting all lighting in the EU to LEDs could save an additional 188 TWh/year. This is equivalent to one-quarter of EU households’ annual energy demand and the energy required to power approximately 50 million heat pumps or 55 million Electric Vehicles [IEA Energy Efficiency 2022].

The energy savings potential is even bigger in the non-residential sector (i.e. outdoor and professional lighting), where significant additional savings can be achieved through the adoption of lighting controls.
Studies show that lighting controls can deliver an additional 29 TWh/year of energy savings by 2030 and up to 56 TWh/year in 2050). [VITO et al., Preparatory study on lighting systems, ENER Lot 37, Brussels, 2016].
For example, in the German non-residential sector, potential energy savings of up to 80% have been identified if LED technology is combined with smart lighting solutions. This could result in savings of 45.6 TWh and prevent 17.6 million tons of CO2 emissions per year [Licht.de 2022].

Completing the Transition to Efficient, Smart Lighting

Lighting can be one of the easiest ways of reducing energy consumed in installations, moving to LED and moving to controllable systems can greatly reduce the energy consumption without extensive construction work.

Our proposal to include "controllable LED-based luminaire manufacturing" as a Taxonomy activity recognizes the significant efficiency transformation that the lighting industry has already undergone. It also acknowledges the need to fully unlock the potential of LED technology by accelerating the conversion of the installed base to LED lighting and smart lighting systems.

Including manufacture of controllable LED-based luminaire in the EU Taxonomy would:

- Contribute significantly to Europe's climate and energy objectives, by reducing energy consumption and lowering CO2 emissions.
- Support the transition to smart lighting solutions, which combine LED technology with advanced controls to maximize energy savings.
- Ensure clarity and equal access to sustainable finance opportunities for all European lighting manufacturers, fostering a level playing field within the industry.

LightingEurope's proposed amendments

Please find below our suggested amendments **(in red)** to Annex I of Regulation (EU) 2021/2139, aimed at including manufacture (and maintenance) of controllable LED-based luminaires under specific economic activities already covered by the EU Taxonomy Climate Delegated Act.

3.5. Manufacture of energy efficiency equipment for buildings

Description of the activity

Manufacture of energy efficiency equipment for buildings.

The economic activities in this category could be associated with several NACE codes, in particular C16.23, C23.11, C23.20, C23.31, C23.32, C23.43, C.23.61, C25.11, C25.12, C25.21, C25.29, C25.93, C27.31, C27.32, C27.33, C27.40, C27.51, C28.11, C28.12,

C28.13, C28.14, in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an enabling activity in accordance with Article 10(1), point (i), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

Technical screening criteria

Substantial contribution to climate change mitigation	
The economic activity manufactures one or more of the following products and their key components: […] (g) light sources rated in the highest two populated classes of energy efficiency in accordance with Regulation (EU) 2017/1369 and delegated acts adopted under that Regulation; [...] (j) presence and daylight controls for lighting systems; (…) […] **NEW (q bis) controllable luminaires with LED-based light source for indoor lighting or architectural lighting.** **Controllable luminaire means a luminaire with integrated capability of being dimmed, based on a local or external control signal.** **Products placed on the EU market should include control gear(s) and light source(s) that are compliant with Regulation (EU) 2019/2020 and Regulation (EU) 2019/2015.**	
Do no significant harm ('DNSH')	
(2) Climate change adaption	The activity complies with the criteria set out in Appendix A to this Annex.
(3) Sustainable use and protection of water and marine resources	The activity complies with the criteria set out in Appendix B to this Annex.
(4) Transition to a circular economy	The activity assesses the availability of and, where feasible, adopts techniques that support: (a) reuse and use of secondary raw materials and reused components in products manufactured; (b) design for high durability, recyclability, easy disassembly and adaptability of products manufactured; (c) waste management that prioritises recycling over disposal, in the manufacturing process; (d) information on and traceability of substances of concern throughout the life cycle of the manufactured products.
(5) Pollution prevention and control	The activity complies with the criteria set out in Appendix C to this Annex.
(6) Protection and restoration of biodiversity	The activity complies with the criteria set out in Appendix D to this Annex.

and ecosystems	

6.13. Infrastructure for personal mobility, cycle logistics

Description of the activity

Construction, modernisation, maintenance and operation of infrastructure for personal mobility, including the construction of roads, motorways bridges and tunnels and other infrastructure that are dedicated to pedestrians and bicycles, with or without electric assist.

The activity includes also manufacturing of luminaires for that infrastructure.

The economic activities in this category could be associated with several NACE codes, in particular **C27.40**, F42.11, F42.12, F42.13, F43.21, M71.12 and M71.20 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an enabling activity as referred to in Article 10(1), point (i), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

Technical screening criteria

Substantial contribution to climate change mitigation	
The infrastructure that is constructed and operated is dedicated to personal mobility or cycle logistics: pavements, bike lanes and pedestrian zones, **including parks and outdoor sports facilities,** electrical charging and hydrogen refuelling installations for personal mobility devices. **The activity also includes manufacturing of controllable luminaires with LED-based light source for pavements, bike lanes or pedestrian zones, including parks and outdoor sports facilities.** **Controllable luminaire means a luminaire with integrated capability of being dimmed, based on a local or external control signal.** **Products placed on the EU market should include control gear(s) and light source(s) that are compliant with Regulation (EU) 2019/2020 and Regulation (EU) 2019/2015.**	
Do no significant harm ('DNSH')	
(2) Climate change adaption	The activity complies with the criteria set out in Appendix A to this Annex.
(3) Sustainable use and protection of water and marine resources	The activity complies with the criteria set out in Appendix B to this Annex.
(4) Transition to a circular economy	At least 70 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Commission Decision 2000/532/EC) generated on the construction site is prepared for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other materials, in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol. Operators limit waste generation in processes related to construction and demolition, in accordance with the EU

	Construction and Demolition Waste Management Protocol, taking into account best available techniques and using selective demolition to enable removal and safe handling of hazardous substances and facilitate reuse and high-quality recycling by selective removal of materials, using available sorting systems for construction and demolition waste. **The luminaire manufacturing activity assesses the availability of and, where feasible, adopts techniques that support:** **(a) reuse and use of secondary raw materials and reused components in products manufactured;** **(b) design for high durability, recyclability, easy disassembly and adaptability of products manufactured;** **(c) waste management that prioritises recycling over disposal, in the manufacturing process;** **(d) information on and traceability of substances of concern throughout the life cycle of the manufactured products.**
(5) Pollution prevention and control	Measures are taken to reduce noise, dust and pollutant emissions during construction or maintenance works.
(6) Protection and restoration of biodiversity and ecosystems	The activity complies with the criteria set out in Appendix D to this Annex.

6.14. Infrastructure for rail transport

Description of the activity

Construction, modernisation, operation and maintenance of railways and subways as well as bridges and tunnels, stations, terminals, rail service facilities, safety and traffic management systems including the provision of architectural services, engineering services, drafting services, building inspection services and surveying and mapping services and the like as well as the performance of physical, chemical and other analytical testing of all types of materials and products.

Manufacture, installation, technical consulting, retrofitting, upgrade, repair, maintenance, repurposing of products, equipment, systems and software related to one of the following elements:

a) assembled railway track fixtures;
b) rail constituents detailed in Points 2.2 to 2.6 to Annex II of Directive (EU) 2016/797,

NEW (b bis) lighting installations being part of the railway infrastructure.

The economic activities in this category could be associated with several NACE codes, in particular C25.99, **C27.40**, C27.9, C30.20, F42.12, F42.13, M71.12, M71.20, F43.21, and H52.21 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an enabling activity as referred to in Article 10(1), point (i), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

Technical screening criteria

Substantial contribution to climate change mitigation	
1. The activity complies with one of the following criteria: (a) the infrastructure (as defined in Annex II.2 to Directive (EU) 2016/797 of the European Parliament and of the Council) is either: (i) electrified trackside infrastructure and associated subsystems: infrastructure, energy, on-board control-command and signalling, and trackside control-command and signalling subsystems as defined in Annex II.2 to Directive (EU)2016/797; (ii) new and existing trackside infrastructure and associated subsystems where there is a plan for electrification as regards line tracks, and, to the extent necessary for electric train operations, as regards sidings, or where the infrastructure will be fit for use by zero tailpipe CO_2 emission trains within 10 years from the beginning of the activity: infrastructure, energy, on-board control-command and signalling, and trackside control-command and signalling subsystems as defined in Annex II.2 to Directive (EU)2016/797; (iii) until 2030, existing trackside infrastructure and associated subsystems that are not part of the TEN-T network and its indicative extensions to third countries, nor any nationally, supranationally or internationally defined network of major rail lines: infrastructure, energy, on-board control-command and signalling, and trackside control-command and signalling subsystems as defined in Annex II.2 to Directive (EU) 2016/797; (b) the infrastructure and installations are dedicated to transhipping freight between the modes: terminal infrastructure and superstructures for loading, unloading and transhipment of goods; (c) infrastructure and installations are dedicated to the transfer of passengers from rail to rail or from other modes to rail; (d) digital tools enable an increase in efficiency, capacity or energy saving, **NEW (d bis) the activity manufactures controllable luminaires with LED-based light source for rail infrastructure, including railways, subways, bridges, tunnels, stations, terminals, and rail service facilities.** **Controllable luminaire means a luminaire with integrated capability of being dimmed, based on a local or external control signal. Products placed on the EU market should include control gear(s) and light source(s) that are compliant with Regulation (EU) 2019/2020 and Regulation (EU) 2019/2015.** 2. The infrastructure is not dedicated to the transport or storage of fossil fuels.	
Do no significant harm ('DNSH')	
(2) Climate change adaption	The activity complies with the criteria set out in Appendix A to this Annex.
(3) Sustainable use and protection	The activity complies with the criteria set out in Appendix B to this Annex.

of water and marine resources	
(4) Transition to a circular economy	Operators limit waste generation in processes related to construction and demolition and take into account best available techniques. At least 70 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC) generated on the construction site is prepared for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other materials, in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol. Operators use selective demolition to enable removal and safe handling of hazardous substances and facilitate reuse and high-quality recycling. For manufacturing of constituents, the activity assesses the availability of and, where feasible, adopts techniques that support: (a) reuse and use of secondary raw materials and re-used components in products manufactured; (b) design for high durability, recyclability, easy disassembly and adaptability of products manufactured; (c) waste management that prioritises recycling over disposal, in the manufacturing process; (d) information on and traceability of substances of concern throughout the life cycle of the manufactured products.
(5) Pollution prevention and control	Where appropriate, given the sensitivity of the area affected, in particular in terms of the size of population affected, noise and vibrations from use of infrastructure are mitigated by introducing open trenches, wall barriers, or other measures and they comply with Directive 2002/49/EC of the European Parliament and of the Council. Measures are taken to reduce noise, dust and pollutant emissions during construction or maintenance works. For manufacturing of constituents, the activity complies with the criteria set out in Appendix C to this Annex.
(6) Protection and restoration of biodiversity and ecosystems	The activity complies with the criteria set out in Appendix D to this Annex. In addition, the following is to be ensured: (a) in the Union, in relation with Natura 2000 sites: the activity does not have significant effects on Natura 2000 sites in view of their conservation objectives on the basis of an appropriate assessment carried out in accordance with Article 6(3) of Council Directive 92/43/EEC; (b) in the Union, in any area: the activity is not detrimental to the recovery or maintenance of the populations of species protected under Directive 92/43/EEC and Directive 2009/147/EC of the European Parliament and of the Council at a favourable conservation status. The activity is also not detrimental to the recovery or maintenance of the habitat types concerned and

	protected under Directive 92/43/EEC at a favourable conservation status; (c) outside of the Union, activities are conducted in accordance with applicable law related to the conservation of habitats and species.

6.15. Infrastructure enabling low-carbon road transport and public transport

Description of the activity

Construction, modernisation, maintenance and operation of infrastructure that is required for zero tailpipe CO 2 operation of zero-emissions road transport, as well as infrastructure dedicated to transshipment, and infrastructure required for operating urban transport.

The activity includes also manufacturing of luminaires for that infrastructure.

The economic activities in this category could be associated with several NACE codes, in particular **C27.40**, F42.11, F42.13, M71.12 and M71.20 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an enabling activity as referred to in Article 10(1), point (i), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

Technical screening criteria

Substantial contribution to climate change mitigation
1. The activity complies with one or more of the following criteria: (a) the infrastructure is dedicated to the operation of vehicles with zero tailpipe CO 2 emissions: electric charging points, electricity grid connection upgrades, hydrogen fuelling stations or electric road systems (ERS); (b) the infrastructure and installations are dedicated to transhipping freight between the modes: terminal infrastructure and superstructures for loading, unloading and transhipment of goods; (c) the infrastructure and installations are dedicated to urban and suburban public passenger transport, including associated signalling systems for metro, tram and rail systems. **NEW (c bis) the activity manufactures controllable luminaires with LED-based light source for motorways, streets, roads, other vehicular ways, outdoor parking spaces, bridges, tunnels and airfields. Controllable luminaire means a luminaire with integrated capability of being dimmed, based on a local or external control signal. Products placed on the EU market should include control gear(s) and light source(s) that are compliant with Regulation (EU) 2019/2020 and Regulation (EU) 2019/2015.** 2. The infrastructure is not dedicated to the transport or storage of fossil fuels.
Do no significant harm ('DNSH')

(2) Climate change adaption	The activity complies with the criteria set out in Appendix A to this Annex.
(3) Sustainable use and protection of water and marine resources	The activity complies with the criteria set out in Appendix B to this Annex.
(4) Transition to a circular economy	At least 70 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material defined in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC) generated on the construction site is prepared for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other materials, in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol. Operators limit waste generation in processes related construction and demolition, in accordance with the EU Construction and Demolition Waste Management Protocol and taking into account best available techniques and using selective demolition to enable removal and safe handling of hazardous substances and facilitate reuse and high-quality recycling by selective removal of materials, using available sorting systems for construction and demolition waste.
(5) Pollution prevention and control	Where relevant, noise and vibrations from use of infrastructure are mitigated by introducing open trenches, wall barriers or other measures and comply with Directive 2002/49/EC. Measures are taken to reduce noise, dust and pollutant emissions during construction or maintenance works.
(6) Protection and restoration of biodiversity and ecosystems	The activity complies with the criteria set out in Appendix D to this Annex. Where relevant, maintenance of vegetation along road transport infrastructure ensures that invasive species do not spread. Mitigation measures have been implemented to avoid wildlife collisions.

7.3. Installation, maintenance and repair of energy efficiency equipment

Description of the activity

Individual renovation measures consisting in installation, maintenance or repair of energy efficiency equipment.

The economic activities in this category could be associated with several NACE codes, in particular F42, F43, M71, C16, C17, C22, C23, C25, C27, C28, S95.21, S95.22, C33.12 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an enabling activity as referred to in Article 10(1), point (i), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

Technical screening criteria

Substantial contribution to climate change mitigation

<table>
<tr><td colspan="2">The activity consists in one of the following individual measures provided that they comply with minimum requirements set for individual components and systems in the applicable national measures implementing Directive 2010/31/EU and, where applicable, are rated in the highest two populated classes of energy efficiency in accordance with Regulation (EU) 2017/1369 and delegated acts adopted under that Regulation:

(a) addition of insulation to existing envelope components, such as external walls (including green walls), roofs (including green roofs), lofts, basements and ground floors (including measures to ensure air-tightness, measures to reduce the effects of thermal bridges and scaffolding) and products for the application of the insulation to the building envelope (including mechanical fixings and adhesive);

(b) replacement of existing windows with new energy efficient windows;

(c) replacement of existing external doors with new energy efficient doors;

(d) installation and replacement of energy efficient light sources;

(e) installation, replacement, maintenance and repair of heating, ventilation and air-conditioning (HVAC) and water heating systems, including equipment related to district heating services, with highly efficient technologies;

(f) installation of low water and energy using kitchen and sanitary water fittings which comply with technical specifications set out in Appendix E to this Annex and, in case of shower solutions, mixer showers, shower outlets and taps, have a max water flow of 6 L/min or less attested by an existing label in the Union market.

NEW (f bis) installation, replacement, maintenance and repair of controllable luminaires with LED-based light source and their components for building and infrastructure use.
Controllable luminaire means a luminaire with integrated capability of being dimmed, based on a local or external control signal.
Products placed on the EU market should include control gear(s) and light source(s) that are compliant with Regulation (EU) 2019/2020 and Regulation (EU) 2019/2015.</td></tr>
<tr><td colspan="2">Do no significant harm (‘DNSH’)</td></tr>
<tr><td>(2) Climate change adaption</td><td>The activity complies with the criteria set out in Appendix A to this Annex.</td></tr>
<tr><td>(3) Sustainable use and protection of water and marine resources</td><td>N/A</td></tr>
<tr><td>(4) Transition to a circular economy</td><td>N/A</td></tr>
<tr><td>(5) Pollution prevention and control</td><td>Building components and materials comply with the criteria set out in Appendix C to this Annex.

In case of addition of thermal insulation to an existing building envelope, a building survey is carried out in accordance with national law by a competent specialist with training in asbestos surveying. Any stripping of lagging that contains or is likely to contain asbestos, breaking or mechanical drilling or screwing or removal of insulation board, tiles and other asbestos containing</td></tr>
</table>

	materials is carried out by appropriately trained personnel, with health monitoring before, during and after the works, in accordance with national law.
(6) Protection and restoration of biodiversity and ecosystems	N/A

Contact

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LightingEurope is the voice of the lighting industry, based in Brussels and representing 32 companies and national associations. Together these members account for over 1,000 European companies, a majority of which are small or medium-sized. They represent a total European workforce of over 80,000 people and an annual turnover exceeding 15 billion euro. LightingEurope is committed to promoting efficient lighting that benefits human comfort, safety and wellbeing, and the environment. LightingEurope advocates a positive business and regulatory environment to foster fair competition and growth for the European lighting industry. More information is available at www.lightingeurope.org.