

## RESEARCH AND STANDARDISATION

### RESPONSE FORM for Standardisation groups

## Opportunity for standardisation to contribute to the *European Partnership on Metrology EPM* under Horizon Europe

**Objective: to collect standardization needs and suggestions to develop research projects in testing and measurements for the upcoming European Partnership on Metrology (EPM) calls in 2021**

In the frame of the cooperation agreement between CEN-CENELEC and EURAMET, CEN and CENELEC have been invited by the EURAMET Management to put forward their **testing and measurement needs in research** for consideration by metrology institutes for future calls under EPM.

**Relevant technical groups** (sector fora, advisory boards, coordination groups, TCs, WGs...) **are invited to contribute with**

- a short introduction or an overview paper of their unaddressed standardization needs for testing and measurement, and
- a contact person (secretary, chair, convenor, liaison officer, etc.) whom proposers for the Potential Research Topics can contact,

by using this Response Form and send it at STAIR EMPIR, Mr Ortwin Costenoble: [empir@nen.nl](mailto:empir@nen.nl)

Deadline for the consultation: **11 December 2020.**

<b>Source of the identified need</b> (identification of TC, WG, etc, incl. title)	<input type="checkbox"/> CEN/TC 0/WG 0 / <input type="checkbox"/> CLC/TC 0/WG 0 <input type="checkbox"/> ISO/TC 0/SC 0 / WG 0 / <input type="checkbox"/> IEC/TC 0/SC 0 / WG 0 <input checked="" type="checkbox"/> Other, namely <i>CIE, International Commission on Illumination, Division 2 Physical Measurement of Light and Radiation and Division 4 Transportation and Exterior Applications.</i>
<b>European entity</b> responsible for submission of the need	<i>International Commission on Illumination (CIE)</i>
<b>Person that can be contacted for more detail</b>	<i>Kathryn Nield General Secretary CIE Central Bureau Babenbergerstrasse 9/9A Vienna, 1010 Austria ciecb@cie.co.at</i>
<b>Title:</b>	<i>Metrology of Obtrusive Light and Sky Glow</i>
<b>Unaddressed need</b>	<i>To date there is no standardized instrumentation and method for the trecaeble measurement of obtrusive light and sky glow.</i>
<b>Further explanation of need</b> (TC business plan, road map, formal decision, work item, etc.)	<i>The phenomenon of obtrusive light (also referred as light pollution), which is produced by artificial light at night (ALAN), has been a focus of scientific and environmental</i>

	<p><i>research for many years. The adverse effects of obtrusive light include many environmental aspects impacting on humans (glare, intrusive light, sleep disruption, etc.), fauna and flora (including biodiversity) while at the same time it disturbs astronomical observations and the visibility of the night sky.</i></p> <p><i>The lack of a standardized metrology system to quantify obtrusive light and the high measurement uncertainties of currently used methods, prevent the systematic assessment of the problem; this subsequently slows down legislative efforts towards the mitigation of these effects.</i></p> <p><i>Currently, no widely applicable measurement instruments or techniques are available that suit the needs of the different scientific disciplines and stakeholders. Most of the instruments used today suffer from several drawbacks including lack of traceable SI calibration, poor long-term stability, and inadequate relative spectral responsivity.</i></p> <p><i>Astronomers and lighting engineers are using different types of instruments and metrics while focusing on the same issue of sky glow increased by the artificial light at night.</i></p> <p><i>Environmental researchers on the other hand approach the same problem from the perspective of the various biomes, e.g. birds or insects, impacts on plants. Therefore, efforts to mitigate the effect of obtrusive light and to implement legislative steps are hampered due to the fragmented knowledge across all disciplines, while a comparison of most existing measurements is challenging, if not impossible.</i></p> <p><i>There is a strong need for the establishment of a holistic metrology system that includes obtrusive light metrics and measurands, traceable instrument calibration, measurement methods and uncertainty estimation for each result obtained in the field. The standardization and legislative bodies need a well-defined metrology system to serve as the backbone of future light pollution measurements in order to mitigate its adverse effects.</i></p> <p><i>CIE is working on the matter of obtrusive light since the 1980s. Currently, there are several active and planned TCs dealing with aspects of this issue, but certain data are missing regarding the measurements aspects . A standardized metrology system consisting of metrics, methods and instrumentation is expected to set the basis for current and future standardization efforts towards the regulation and mitigation of obtrusive light.</i></p>
<p><b>Proof of need by the TC/SC</b></p>	<p><i>The following CIE TCs are expected to gain benefits from the proposed standardisation topic:</i></p> <ul style="list-style-type: none"> <li><i>- NWIP in Division 2 - Measurement of obtrusive light and sky glow</i></li> <li><i>- TC 4-58 Obtrusive Light from Colourful and Dynamic Lighting and its Limitation</i></li> <li><i>- TC 4-59 Guide for Lighting Urban Elements</i></li> </ul>

	<p>- <i>TC 4-61 Artificial Lighting and its Impact on the Natural Environment</i></p> <p>- <i>TC 4-62 Adaptive Road Lighting</i></p> <p><i>CIE has identified the urgent need for research in this field and the topic will be included in an update of the CIE Research Strategy in 2021 and beyond.</i></p>
<b>Enclosures</b>	<p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No</p>

\*See more information or a link to the webinar at

[EMPIR website](#)

[CEN/CENELEC website "Standards and metrology"](#)