

**Mahindra – TERI Centre of Excellence for Sustainable Habitats**

**Launch Event for Sky Modelling Report and CIE Sky Type Finder Tool**

**Date: 29<sup>th</sup> November 2022**

**10:30 AM-1:00 PM IST**

**Venue: India Habitat Centre, New Delhi**

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## **BACKGROUND**

The **Mahindra TERI Centre of Excellence (CoE)** for Sustainable Habitat was jointly established by **Mahindra Lifespaces (MLDL) & The Energy and Resources Institute (TERI)** in the year 2016. The vision of the Centre of Excellence is to build a greener urban future by developing energy-efficient solutions tailored to Indian climates with an objective to develop a repository of innovative materials and technologies in the context of the Indian building sector and environments. The research activities under the present scope consist of Standardization & Measurement of Building Materials, Building Envelope studies, Comfort studies (Visual & Thermal), Performance Standards, Matrices, Guidelines & Toolkits, Sustainable water use in habitats, and **Sky Modelling study** for Indian sky conditions.

The use of daylight in buildings can be attributed to different conditions and varying design criteria. One **significant benefit** of using daylight is that it **reduces energy consumption** and indirectly reduces emissions. Other design criteria related to the use of daylight in buildings are its **physiological and psychological impact** on people and the occupant's satisfaction. These beneficial effects make daylight an aesthetic tool for the architect and a qualitative asset for the users of a building. The effective use of daylight is mainly a function of the luminance of the sky exposed to the glazing system. Therefore, **accurate data about the luminance and radiance distribution of the sky** are needed for the optimum use of daylight. An accurate estimation of the available solar radiation and daylight is to acquire the total amount of radiation and light coming from the sky and the radiance and luminance patterns over the sky vault to define the sky conditions.

The Sky Modelling research at the **Mahindra-TERI Centre of Excellence** aims to define the sky conditions from the CIE standard general sky that best represents the sky luminance distribution for the Gurugram location in India. The main objective of this activity is to develop the sky model with extensive luminance and radiance data collection to generate **realistic simulation background** for daylight integration in buildings for a given location. Luminance and radiance data collection and sky modeling analysis at such an extensive scale is the first-of-its-kind happening in the country. These findings will provide architects and building designers with a **reliable and simple alternative that incorporates the daylight coefficient approach** to predict indoor daylight illuminance under realistic sky conditions. The data can be used for accurate daylight simulations and analysis by incorporating **measured CIE sky type than using the default overcast sky** as the input parameter. Further, it can also be used for intelligent building control (e.g., fenestration automation or advancement in electro-opaque glass). The developed

**CIE Standard sky type finder** is a tool that showcases the prevailing sky distribution model for New Delhi and NCR locations using CIE standard Skies.

To disseminate the importance of modelling the sky in co-relation with the impact on daylighting, and to showcase the fresh perspectives arising out of the sky modelling activity carried out under **Mahindra TERI Centre of Excellence (CoE)**, MLDL and TERI, are jointly hosting a **Launch Event for Sky Modelling Report and CIE Sky Type Finder Tool on 29 November 2022 at India Habitat Centre from 10:30 AM-1:00 PM** in conjugation with constructive presentations in the area of daylighting amongst multidisciplinary academic experts, researchers, and pioneers from the daylighting industry. A pool of experts will share their experiences on several aspects including energy savings through daylight, data gap challenges in the field of daylighting, achieving visual comfort through the integration of daylight, derivation of sky modelling, and related technological advancements. The experience, insights, and suggestions from the industry and academic experts would help us in providing robust, credible, and critiqued information for public use.