



## Comfort in Buildings: Subjective Assessment of the Visual Environment

António José Santos<sup>1</sup>, Margarida Rebelo<sup>1</sup>

<sup>1</sup> Laboratório Nacional de Engenharia Civil, Lisboa, Portugal  
asantos@lnec.pt

**Abstract.** Traditional approaches to assessing daylight and electric lighting conditions in buildings usually do not include the human factor and the subjectivity of users as an analysis and reference factor. However, new approaches highlighted the importance of occupants' attitudes and behaviours in evaluating the luminous environment due to the interaction they establish with the surrounding environment to make it pleasant, comfortable, and functional for executing the different visual tasks. It is, therefore, essential to understand the way in which individuals perceive the luminous environment in the spaces they occupy, which varies depending on their perception and expectations, and which gives rise to subjective evaluation criteria.

The general methodology used in this study fits into what is usually called a post-occupancy evaluation (POE) study, carried out under real conditions of use of inner spaces. Thus, to establish behavioural-type profiles – the ultimate objective of the study - there was a need to establish a bridge between two methodological assessment approaches, simultaneously subjective and objective, in a context of interdisciplinarity. In this sense, the methodology used in the present study included: i) the implementation of a survey of the occupants of the analysed buildings, ii) objective lighting measurements, i.e., *in situ* surveys of the real conditions of the lighting environment, and iii) the evaluation and complementary characterisations, through observation and photographic recording of the spaces, parameterisations and semi-directive interviews with the occupants.

The results of the survey indicate that improving the environmental conditions of workspaces is mainly about improving (day)lighting conditions through good daylight and a thermal environment via a comfortable temperature. These results are, however, slightly different from other studies attesting to the importance of ventilation and air quality, followed by thermal and lighting conditions.

The study also highlighted that the clear preference for the "natural" element of lighting seems to be related to shared beliefs about the positive effects on health and work performance. As such, the subjective evaluation of the lighting environment in indoor spaces is of potential interest to designers and researchers interested in the psychological effects of light on building occupants.

**Keywords:** Comfort in buildings, visual comfort, daylighting, POE.