

Factsheet

Low Carbon, High Comfort Integrated Lighting

EBC ANNEX 90 - SHC TASK 70

The aim of this project is to identify and support implementing the potentials of lighting in decarbonization with a global perspective. It is being operated jointly with the IEA TCP on Solar Heating and Cooling project 'Task 70'. It is aligning the new integrative understanding of humans' light needs with digitized lighting at building and building-related urban scales. The project scope is lighting systems for indoor environments and the interrelation of buildings (facades) with urban settings. The focus is on lighting appliances in non-domestic buildings. The project deals with integrating:

- daylight utilization by enhanced facade technologies and other architectural solutions,
- electric lighting schemes addressing technology and design strategies to progressing digitalization, and
- lighting control systems and strategies with special emphasis on visual and non-visual user needs with special emphasis on the interface of day and electric lighting.

This is put under the constraint of low carbon emission for fulfilling the lighting services in a life cycle assessment / circular economy context. The project is targeting building designers and consultants, industry (façade, electric lighting, and software companies), owners (investors), and authorities by providing strategic, technical, and economic information and with network activities helping these stakeholders overcome barriers in identifying and then pursuing and implementing low carbon lighting concepts and installations.

The following project deliverables are planned:

- to establish scenarios, strategies, roadmaps for low carbon lighting and passive solar including a survey on data sources, methods and regulations, a catalogue of scenarios, a simple tool to rate life cycle analysis and global warming potential, and design guidelines;
- a report on visual and non-visual requirements;

PROJECT OBJECTIVES

- 1** support the decarbonisation of lighting solutions and helping to bridge the gap between a component-centred viewpoint and design-oriented system approaches,
- 2** support the transition from purely focusing on energy to a life cycle assessment perspective,
- 3** given the rapidly-developing digitalization of buildings and lighting installations, contextualize their technology, design, and operational aspects, and add to the digital chain, such as better design processes and align these with the developing understanding of user needs,
- 4** bring together the different players involved through workshops and specific activities, and create added value by knowledge transfer into standardization, regulations, and building certification, and
- 5** foster the broad implementation of low carbon solutions, especially in developing countries, by promoting tailored low technology yet high impact solutions through demonstration, design guidelines, and workshops.

- information material on 'new developments for non-visual aspects';
- a set of refactored Radiance core tools to support digitalized lighting solutions focusing on technology, design tools and processes;

INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA) was established as an autonomous body within the Organisation for Economic Co-operation and Development (OECD) in 1974, with the purpose of strengthening co-operation in the vital area of energy policy. As one element of this programme, member countries take part in various energy research, development and demonstration activities. The Energy in Buildings and Communities Programme has co-ordinated various research projects associated with energy prediction, monitoring and energy efficiency measures in both new and existing buildings. The results have provided much valuable information about the state of the art of building analysis and have led to further IEA co-ordinated research.

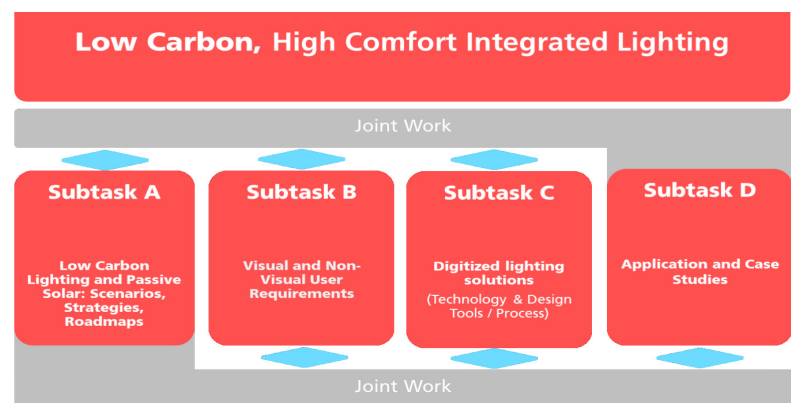
EBC VISION

By 2030, near-zero primary energy use and carbon dioxide emissions solutions have been adopted in new buildings and communities, and a wide range of reliable technical solutions have been made available for the existing building stock.

EBC MISSION

To accelerate the transformation of the built environment towards more energy efficient and sustainable buildings and communities, by the development and dissemination of knowledge and technologies through international collaborative research and innovation.

- information material about 'impact of densification on visual comfort and well-being';
- a report on applications and case studies 'low carbon daylighting and lighting solutions: practical applications';
- promotion of highly efficient lighting solutions for Sunbelt Regions through workshops and production of a brochure.



Structure of the four activities

Source: EBC Annex 90 / SHC Task 70

Project duration

Ongoing (2023 - 2026)

Operating Agent

Dr.-Ing. Jan de Boer
Gruppenleiter Lichttechnik und passive Solarsysteme
Abteilung Energieeffizienz und Raumklima
Fraunhofer-Institut für Bauphysik IBP
Nobelstr. 12
70569 Stuttgart
GERMANY
Email: jan.deboer@ibp.fraunhofer.de

Participating countries

Austria, Australia, Belgium, Brazil, Canada, Czech Republic, Denmark, France, Germany, Greece, New Zealand, Norway, Spain, Sweden, Switzerland, Türkiye, USA, UK

Further information

www.iea-ebc.org