

Science for Environment Policy

Indoor environmental quality of LEED-certified buildings evaluated

Staff in buildings that have been certified as 'green' under the LEED scheme are just as satisfied with their indoor working environment as people working in non-LEED buildings, according to research on commercial buildings. The study suggests that investment in the thermal and acoustic aspects of buildings, however, would further improve occupant satisfaction.

LEED¹ (Leadership in Energy and Environmental Design) is a voluntary, third-party certification scheme that rates the design, operation and construction of green buildings. The scheme, which is used internationally, was established by the United States Green Building Council and covers new and existing buildings that "*significantly reduce or eliminate negative impacts on the environment and the occupants*".

It is generally regarded in the building industry that LEED, and other similar certification schemes around the world, has helped bring sustainability into mainstream building design and construction. However, it is less clear whether it can also improve indoor working environments. Studies have shown that people who are happier with their working environment are less likely to have frequent absences or to want to leave their job, and by implication, this should be better for job satisfaction and company productivity. The design, operation and management of buildings are therefore important aspects of occupant satisfaction with the workplace.

In this study, the researchers investigated whether occupant satisfaction was higher in 'green buildings' that had been awarded LEED certification or in office buildings that have not received LEED certification.

The researchers focused on occupants' perceptions of indoor environmental quality (IEQ), for which buildings are rated under LEED. They analysed data from a web-based survey available to occupants of commercial buildings across the world, which has been running for over 10 years² and can be taken at any time. In total, 21,477 people had completed the survey, at the time of study, from 65 LEED buildings and 79 non-LEED certified buildings, mainly in the United States, but also in Europe, Australia and Canada.

Overall, the analysis suggests that occupants in LEED buildings were just as satisfied with the building, workspace and most aspects of the IEQ as occupants in non-LEED buildings. Occupants in LEED buildings were more satisfied with the indoor air quality (defined by stuffy or stale air, air cleanliness and odours), as well as other IEQ factors, such as the building maintenance, workspace cleanliness and building cleanliness.

Aspects of the IEQ where the occupants of LEED buildings were less satisfied than occupants in non-LEED buildings included the amount of light, visual privacy, visual comfort and amount of space in the work area.

Both LEED and non-LEED occupants were dissatisfied with the indoor temperature, noise and sound privacy. However, occupants of LEED buildings were even less satisfied with the noise and sound privacy aspects of IEQ compared with non-LEED respondents.

These results suggest that more attention could be focused on the thermal and acoustic environment in commercial buildings to improve occupant satisfaction with their working environment and that, current LEED certification is not effective on improving perceived indoor environmental quality and occupant satisfaction.



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1. See: www.leed.net

2. See:
[www.cbe.berkeley.edu/research/
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