

Indoor Environment

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Consideration of indoor environment quality in the context of improved environmental sustainability of buildings must address the trade-offs between the measures implemented to improve indoor environmental quality and the impacts of these measures on the larger (general) environment at the local, regional, and global levels. Indoor environmental factors of concern are air quality, illumination, acoustics, and thermal conditions. Global environmental factors of concern are maintenance of biodiversity, global climate change, and stratospheric ozone depletion. Local and regional environmental factors of concern include pollution of air, water and soil; consumption of renewable and non-renewable resources (including oil and minerals); toxicity of material releases to the environment; and, impacts of building-related activities on human social and economic systems.

For example, where increased use of illumination or ventilation is necessary to improve indoor environmental quality, the energy costs of such improvement measures must be assessed and the local, regional, and global environmental impacts of such energy use must also be considered. Similarly, the selection of interior materials intended to improve indoor air quality or acoustic performance affects the quality of both the indoor and the general environment. Thus, the relations between the building, its occupants, and the larger environment must be considered in a systematic framework referred to as "building ecology." The concept of building ecology involves consideration of the mutual interdependence and interactions between and among the building, its occupants, and the larger (general) environment. Design and evaluation of sustainable buildings must include systematic assessment of the buildings' impacts on both the occupants and the general environment. Such assessments should include, among others, increased energy consumption related to ventilation, illumination, and thermal control balanced against various factors related to the local, regional, and global environment. Among the factors of concern in the indoor environment are the different individual occupants' physiological and psychological responses to the environment and the type of benchmarking of indoor environment that would be appropriate for evaluation of indoor environmental improvements. In relation to the general environment, factors to be considered are pollution of air (and other media) related to energy production and use, depletion of both renewal and non-renewable natural resources, impacts on biodiversity; the relation between internal and external costs of building construction, operation, and use;

One of the most important targets of SB05 should be to bridge existing gaps among the regions. Therefore, it is necessary to discuss the indoor environmental problems in the developing countries or regions. These will include, among others, the use of biofuels in combustion-based cooking devices, especially in humble dwellings, and the resulting extremely high level of hazardous indoor pollutants. It will also require attention to the impact of such fuel use on the fuel sources including forests and other sources of combustible materials. Finally, it will require attention to the rapid growth in certain developing regions and the special problems of construction and indoor environment in these contexts.

Based on these issues, the indoor environment sessions will focus on following points:

- Examples of indoor environment benchmarking and its target setting,

- Assessment systems for measuring the effect of improvements on indoor environmental quality (such as occupant perception of the environment, occupant health, comfort, and productivity)
- Development of innovative technologies for the improvement of indoor environment, and
- Approaches to measure the trade-offs between indoor environmental improvement and the related impacts on the general environment.
- Lessons resulting from these activities for the practice of sustainable building design, construction, and operation.
- Problems of indoor environment in the developing regions.
- Measures to improve indoor environmental quality & sustainability of buildings in developing regions.