Evolution of Building Environmental Performance Assessment

The earliest form of environmental assessment was aimed at improving living amenities and enhancing living conveniences for its occupants. This was Stage I in the evolution of environmental assessment of buildings. At this stage, since the local environment, surrounding buildings and the global environment were generally considered as open systems, environmental assessments paid little attention to the fact that buildings discharged their environmental load into their surroundings. In this sense, the philosophy behind environmental assessment was opposite to today's approach.

The growth of public concern over air pollution problems and the effects of wind on pedestrians etc. in urban areas such as in Tokyo in the 1960s led to the establishment of formal environmental impact assessments. This was the time when the concept of environmental loading was initiated and incorporated into building environment assessments, the main emphasis of Stage II.

Only negative impacts of buildings on their surrounding environments, such as undue shading, urban air pollution, noise, wind damage, daylight obstruction, and oppressive appearance were considered as environmental impacts or loadings. Thus the concept of environmental assessment of Stage II evolved where a deeper meaning of "environment" was explored. Earlier, the environment was limited to private space or property, whereas in Stage II, it is in reference to public (or non-private) spaces.

The next stage of environmental assessment of buildings began after 1990s where global environmental problems came to forefront. A number of specific methods have emerged which are based on extensive research experience. These include BREEAM (Building Research Establishment Environmental Assessment Method, UK), LEED TM (Leadership in Energy and Environment Design, USA) and GB Tool (Green Building Tool, Canada). In recent years, such building environmental performance assessment methods have gained popularity, particularly in developed countries, and they are frequently used for guiding and rating Environmental Building Design.

The main issue in assessment at this stage is the building's environmental loadings. This stage considers Life Cycle Assessment (LCA) as an evaluating tool for environmental loads. In addition, building performance is also included. Notably, none of the above assessment methods clearly distinguish between these two basic assessment criteria. Also, the scope (or boundary) of the assessment objectives is not clearly stated. Thus the concept of environmental assessment in Stage III lacks the clear underlying philosophy found in the previous stages, while expanding the scope of assessment.

The latest stage of assessment and the Hypothetical Enclosed Space

Development of the Japanese assessment system "CASBEE" (Comprehensive Assessment System for Building Environmental Efficiency) started to address a reconstruction of the current environmental performance assessment framework into a new system clearly based on the perspective of *sustainability*. Stage III in environmental assessment began when it was recognized that the capacities of local environments, and the world as a whole, were reaching a limit.

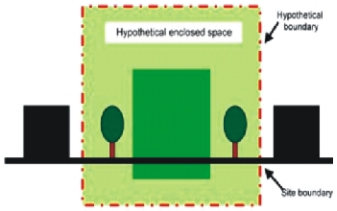
As a result, the concept of closed ecosystems became essential for determining environmental capacities when conducting environmental assessments. "The spaceship earth" was a truly epoch-making expression of the late 60s that explicitly showcased this notion.

Therefore a "hypothetical enclosed space" bounded by the borders of the building site, is proposed in environmental assessments of buildings. The environmental loadings can thus be defined as "the negative environmental impact that extends outside to the public environment beyond the hypothetical enclosed space." The improvement of environmental performance within the hypothetical enclosed space is defined as "the improvement in living amenities for building users."

Thus, considering the negative environmental impacts or "the environmental loadings" as "L" while "the improvement of the environmental performance as "the improvement of the living amenity for the building users" as "Q", the basic idea of assessing both aspects separately is developed.

This is the emerging assessment method of Stage IV, where the concept is to assess the comprehensive building performances based on the following equation:

Building Environmental Efficiency (BEE) = *Q (Building environmental Quality and performance) / L (Building environmental loadings)*



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Interaction with Ar Christopher Benninger and Site Visit to his Mahindra World International College at Mulshi, Pune

On March 18, 2007 Prof Anagha Paranjape-Purohit and Prof Shilpa Hapse accompanied students of M.Arch Environmental Architecture to a full day site visit to Mahindra World International College near Mulshi, Pune. This institute has been designed by famous Ar Christopher Benninger.

Prior to this site visit, the students interacted with Ar Benninger to listen to his views on his design philosophies and experiences in developing the pristine site in the hills surrounding Pune.

The purpose of the site visit was for the post graduate students to understand the climatic performance of the various buildings in terms of form and space compositions evident in the interspersing of indoor and outdoor spaces which are integral part of Ar Benninger's design at this college.

The students spent an entire day at the Mahindra World International College campus and assessed the design in terms of its architectural quality as well as its environmental response.

The following feature aims to give our readers some prominent glimpses of Mahindra World International College at Mulshi, Pune.

Mahindra World International College

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