RESPONSIBLE BUILDING DESIGN CRITERIA

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Abstract - Gandhiji's greatest contribution to sustainable development lies in believing that with simple living the resources of the planet earth can sustain all comfortably which is found in his famous saying that earth provides us enough for our needs but not for our greed is extremely apt today. Historically, the concept of the built environment both embraced and rejected the idea of a balance with our natural environment. Humans & other animal species wanted to have friendship with nature when nature appeared in a pleasant manner but at the same time they had to search for man-made built forms to get the protection from cruelty of nature. The other species never adopted any drastic step in this regard. However, intelligent humans failed to understand the simple thing while creating the induced man –made built spaces to meet the burgeoning demand for various purposes. It is the relationships with the environment and other species that make us part of an ecosystem. Civilizations rise and fall, traditions, values, and policies change, but the natural environment of each city remains an enduring framework within which the human community builds. A city's natural environment and its urban form, taken together, are a record of the interaction between natural processes and human purpose over time. Since earth has finite material resources and biological capacity, humans must live within the carrying capacity on the earth. Exceeding the carrying capacity of the earth's ecosystem over the time might cause more and more stress, then it will go into decline and finally will collapse. They are expanded further than renewed. The construction activity and operational activities linked with the built environment contribute to the loading on to the environmental. Those who design and purchase building have little or no methods to asses the environmental impact of their actions. Thus, there is a need to study the impact of the building design to the ecosystem and finalize the design rule for a sustainable Built Environment .

The qualification of a healthy built environment is judged with respect to several factors and of course parameters where one of them is how much is it compatible to the environment with the ecology. Thus while designing a built environment conjoins two disciplines that is subject of architecture and that of ecology. Architecture is the profession of designing the built environment. Architecture and buildings are inseparable parts of a city. The biggest portion of built environment is building blocks and their attachments. Particularly in modern and semi modern cities today, the dominance of buildings against natural environment is undeniable. To develop a green building and environmental building is a subject of applied ecology, where the designers understand the constitutions, organization and structure of ecosystems, and their impact of architecture are considered from environmental perspectives.. By utilizing the concepts, methods and language of ecology, designers can create architecture that is very much embedded in the site and the surroundings.

To asses on the compatibility of the building with the local or regional environment there should be some criteria for assessment, which implies the definition of building design criteria. If the criteria can be established that are based to our best scientific understanding of environmental capacity that the process of developing a building stock that is sustainable can begin. To do this one must quantify the linkage between the resulting environmental impacts and their cause in building production and use. These are not done in traditional building environmental impact assessment methods, which are based on qualification assumed negative impacts on man made inventions on the natural environment, typically using a code complaint reference building as a standard and improved upon. These indices lack on ecologically derived base line or standard of measure, under which sustainable development can be analyzed and compared with a universal basis.

Using ecosystem services as a baseline, a duel-criteria frame can determine the sustainability. Evaluation may be done in terms of input and output. In the first case, the quantities absorbed/consumed from the ecosystem during the construction process and in last case the emission from the building systems during operation and use.

The input assessment can be defined in terms of mathematical equations considering the ecosystems input and output, are total land, materials, water and energy used. A term ecosystems productivity, i.e. a quantity for carrying earth's environmental carrying capacity can be taken as the reference scale. This scale will dictate about the quantity of land required to absorb the waste of the materials and ecology from the building to eco systems. An ecologically derived baselines can be used to qualify both positive and negative impacts of buildings which will allow equal base lines of the vastly different types of projects depending upon their locations, types and sizes. The present paper will derive a tool to evaluate the effectiveness of the building design to the environment. The ecosystems service criteria use an objective to develop a shelter which consume low energy from the conventional sources, generate energy to meet its maximum demand, create a clean and safe environment. The details of the relative ecological impact of energy and materials in the built in environment as well as identification of effective strategies for reducing environmental impacts will be discussed in the text of the paper.

Keywords - Building, Eco-system, Assessment