

## Application of Building Information Modelling In Analysing IGBC® Ratings (Sustainability Analyses)

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**Abstract :** The building construction sector is using 36% of global energy consumption with 39% of CO<sub>2</sub> emission. Professionals in the Built Environment Sector have long been aware of the industry's contribution towards CO<sub>2</sub> emissions and are now moving towards more sustainable practices. As a result of this, many organizations have introduced rating systems to address the issue of global warming in the construction sector by ranking construction projects based on sustainability parameters. The pre-construction phase of any building project is the most essential time to make decisions for addressing the sustainability aspects. Traditionally, it is very difficult to collect data from different stakeholders and bring it together to form a decision based on factual data to perform sustainability analyses in the pre-construction phase. Building Information Modelling (BIM) is the solution where one single model is the result of the collaborative approach of BIM processes where all the information is shared, extracted, communicated, and stored on a single platform that everyone can access and make decisions based on real-time data. The focus of this research is on the Indian Green Rating System IGBC® with the objective of understanding IGBC® requirements and developing a framework to create the relationship between the rating processes and BIM. A Hypothetical (Architectural) model of a hostel building is developed using AutoCAD 2019 & Revit Arch. 2019, where the framework is applied to generate results on sustainability analysis using Green Building Studio (GBS) and Revit Add-ins. The results of any sustainability analysis are generated within a fraction of a minute, which is very quick in comparison with traditional sustainability analysis. This may save a considerable amount of time as well as cost. The future scope is to integrate Architectural, Structural, and MEP Models to perform accurate sustainability analyses with inputs from industry professionals working on real-life Green BIM projects.

**Keywords :** sustainability analyses, BIM, green rating systems, IGBC®, LEED

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