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Promoting Sustainable Housing with Fundamental Shift beyond Net-Zero and Green Building

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Net positive buildings can be the solution to slow down climate change. Old buildings and minimum code buildings only strive for structural protection, but they do not play a part in climate change mitigation solutions. In this study, we try to demonstrate net positive buildings' contribution in reducing global greenhouse gas emissions by taking the Guwahati region (India) as a study area. First, we developed a north-facing 3-B-H-K residential building plan with a two-car garage using the most commonly used construction materials in the region as a base case scenario. The weather data (like Temperature, Relative Humidity, and Airspeed) for 2020 is collected. With these inputs, the annual total energy consumption for the present climatic condition is simulated using the Ecotect tool. Then three different scenarios (modification of walls, modification of roofs, and floor modification) were created. The energy interpretation for the overall modified case was done and compared with the base case scenario. The result indicates that the total annual energy consumption for the overall modified case was reduced by 70% as compared to the base case model. The remaining 30% of the energy usage was supplied by renewable energy sources using photovoltaic cells to make net energy consumption zero. These findings suggest that the old building can be renovated and modified to act as a mitigation solution to climate change.