ABSTRACT

Population growth and housing development have many impacts on the environment and on quality of life issues. The housing sector in India is growing at a rapid pace and contributing immensely to the growth of the economy. Buildings have major environmental impacts over their life cycle. The environment of existing residential building can create a sizeable impact on the global environment and health of the users. Hence, there is a need to design and construct a green building which minimizes the issues related to environment deteriotion due to construction of buildings. This augurs well for the country and now there is an imminent need to introduce green concepts and techniques in this sector, which can aid growth in a sustainable manner. Green concepts and techniques in the residential sector can help address various national issues. In wake of increase in natural and man-made disaster, it is the green buildings which play a critical role towards averting major ecological crises.

A green building uses less energy, water and natural resources. It generates less waste and provides a healthy living environment for the occupants. It has been observed that Vadodara city has witnesses a remarkable growth in the construction of commercial as well as residential sectors. However, at that time all the builders might not have paid much attention to its influence on the residents and environment. Hence a study was conducted to find out the opinion of builders, the extent of influence of reasons and extent of barriers faced by the builders in adopting green building design and construction, to assess the knowledge of the home owners regarding green buildings, to assess the extent of greenness of the selected existing houses and to prepare an educational programme on green buildings and to test its efficacy.

The present research design was descriptive and experimental in nature. There were two units of inquiry – selected builders and selected home owners who were selected through systematic random sampling and snow ball method respectively. The data were gathered from 75 builders and 220

homeowners of Vadodara city through questionnaire and observation checklist. The questionnaire contained five scales prepared by the researcher viz. Opinion of builders regarding green building, Reason for adopting green building design and construction, and Barriers faced by builders in adopting green building design and construction, Knowledge of home owners regarding green building, and Observation checklist for the assessment of selected houses for their extent of greenness. The content validity of these scales was established. The reliability scores were high for all the scales. Educational programme was prepared in audio visual media and prints media. The validity was established of an educational programme and its reliability was also established. A pre and post test was conducted to assess the efficacy of the educational programme prepared.

The findings revealed that the mean age of the builders was 43.01 years. More than one third of the builders had done diploma in civil engineering. Less than one half of the builders were working as builders since 11 to 20 years with a mean of 16.05 years. It was found that more than one half of the respondents had low extent of exposure to the sources of information on green building. Most of the builders were somewhat familiar about the concept and methods of Green Buildings. Majority of the builders had incorporated Green Building element “Indoor Environment Quality” and “Water Efficiency” in their Private projects only. The opinion of builders regarding Green buildings was presented as ‘Most Favourable’, ‘Somewhat Favourable’ and ‘Least Favourable’. It was found that less than three fourth of the builders had “Somewhat Favourable” opinion regarding Green Buildings. Less than one half of the respondents had “moderate extent of influence” of “economic reasons” for adopting Green building design and construction. The “environmental reasons” influenced “to a great extent” to less than two third of the builders. It was found that majority of the builders reported lack of technical knowledge of builders, contractors, clerk and other project team to a high extent as a barrier in adopting Green building design and construction. More than three fourth of the builders faced “moderate extent” of barrier in availing funds, space and materials for constructing Green buildings.

It was revealed that majority of the decision makers/house owners who jointly or independently took decision regarding the purchase or constructions of the house were male. Majority of the respondents were husbands and a little less than one fifth were females i.e. home makers as respondents. The mean age of the respondents was 42.05 years. Less than one half of the respondents were graduates. It was found that less than three fourth of the respondents were working in service sector. The total monthly family income ranged from Rs. 28,000 to Rs. 2, 00,000 with a mean income of Rs. 88,153.64. Majority of the respondents belonged to nuclear family with a small family size consisting of two to five family members. Majority of the respondents were residing in tenement or twin duplex type houses. Less than one half of the respondents purchased or constructed their house between the year 2008 and 2010.

It was found that less than two third of the respondents had low extent of knowledge on the entire scale of various aspects of green buildings. It was also found that respondents had least score on knowledge regarding “Indoor Environment Quality”. It was reflected that majority of the selected houses assessed had moderate extent of greenness. The weighted mean computed for each factors for assessing the existing selected buildings reflected that the scores for “Indoor Environment Quality” was found to be the highest amongst all the aspects. The aspect of “Innovative Ideas” scored the lowest.

A significant relationship was found between private projects undertaken by the builders and extent of influence of reasons in adopting Green building design and construction. A positive relationship was found between opinion of builders regarding Green building concept and sources of information on Green buildings .A significant relationship was found between extent of influence of reasons for adopting green building design and construction and opinion of builders regarding green building concept. A significant relationship was found between the opinion of builders regarding green building concept and extent of greenness of the selected houses. A positive relationship was found between the extent of knowledge of the home owners regarding various aspects of Green Building and their age. The results showed a significant variation in the extent of knowledge of the home owners on various aspects of

Green Building with their educational level. A positive relationship was found between extent of knowledge of the home owners regarding Green Buildings and extent of greenness of the selected houses. Audio visual media was used to enhance the knowledge of the respondents who scored low on knowledge scale while the print media i.e. booklet was distributed to the respondents. The respondents significantly differed in their knowledge level regarding green buildings before and after the exposure to the educational programme on Green buildings.

The study reflected clear implications for the need to enhance the knowledge of various stakeholders regarding green buildings. An educational programme prepared by the researcher can be used to create awareness among the various stakeholders. The educational institution, Government, NGOs, LEED and GRIHA, Architects, Builders and Civil engineers need to meet the challenges and popularize the concept of green buildings for the sustainable development of the environment.