

AWARENESS AND PREFERENCE TOWARDS GREEN HOME CONCEPT AMONG GEN Y

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ABSTRACT

The building sector has the greatest potential to deliver significant cuts in emission at little or no cost. Buildings account for 18% of global emissions today, or the equivalent of 9 billion tonnes of CO₂ annually. If new technologies in construction are not adopted during this time of rapid growth, emissions could double by 2050, according to the United Nations Environment Program. Green building is the construction and renovation of buildings to reduce overall impact on the environment and human health by reducing pollution and degradation of environment. These buildings aim at using energy, water and other resources efficiently. So the role of youth is central, and they should serve as a beacon of light in ending environment crisis. This paper is an attempt to know about the awareness of new generation towards green technologies used in homes and their preference towards living in such types of homes. In order to achieve the objectives of the study, a questionnaire was administered to 120 new generation (aged between 18 and 32), GenY youth of Calicut City.

KEYWORDS: Awareness, Green Homes, Green Technologies, New Generation (Gen Y), Preference

INTRODUCTION

India will become largest in population contributing 19% to world population. With increasing population demands and needs are also increasing (India to surpass China in Population in Seven Years; United Nation, 2015). About 70% of infrastructure will be added between 2012-2030 (Ramesh S P, ICRTSD, 2013). The construction output will likely to grow worldwide by 2030 and three countries U.S., India and China will become largest construction countries market accounting for 57% of all global growth, and Indian market would grow twice as fast as China in 2030 ("Global Construction Market to Grow \$8 Trillion by 2030: Driven by China, US and India" 2015

According to new research by construction blog Bimhow, (www.initiafy.com/news/how-does-construction-impact-the-environment), the construction sector contributes to 23% of air pollution, 50% of the climatic change, 40% of drinking water pollution, and 50% of landfill wastes.

Furthermore, according to the (Environmental Protection Agency) EPA, construction activity can "significantly change the surface of a land" due to "clearing of vegetation and excavating" which is common in most of the construction projects.

According to the agency, this results in heavy pollution of the particularly surrounding of the water bodies which experience an increase in pollution as a result of various construction projects

The Bureau of Energy Efficiency, a Government agency, predicts that India's constructed floor area will increase by around five times from 2005 to 2030. This parallels other projections, such as the CEU (Central European University study), which estimates an increase of around 400% by 2040, and the McKinsey study, which estimates an increase of more than 400% by 2030. These studies predict that India's total residential floor area will be much larger than its total commercial floor area in 2030. CEU data suggests that, by 2050, 85% of floor space will be in residential use, while 15% will be used for commercial purposes.

For the last few decades, India as well as other countries have shifted a lot of their focus on green buildings. Unsustainable growth inevitably leads to a large environmental changes. The green movement is fastly expanding in the world. There is a significant increase in green growth in the residential segment.

Green Building concept has to be implemented in the construction and repair of buildings to prevent environmental damage and curtail power usage. Green buildings create minimal environmental damage and will be resource efficient throughout the life cycle of the building. A number of processes for solar power creation, rain water harvesting and minimal waste creation will help the structure to attain the stature.

International research confirms that green buildings consume less energy, less water and generates less waste and create a healthy and productive environment for employees.

Green Building concept when implemented properly will help

- To save energy usage through solar panels and star rating appliances
- To save water using water saving taps, rain water harvesting and recycling of water
- To reduce waste by reusing plastics, installing bio gas plants, etc.

Green homes are definitely an available solution, as designing and building green homes result in lower emissions. In a thickly populated country like India, Government is already severely challenged in making basic resources like water and energy and by adopting waste management technique. And more over India is one of the youngest countries in the world, with an average age of 25 and likely to get younger. India's working age population will increase by 240 million over the next 20 years. With a population of 1.2 billion, a strong work ethics, high level of education, entrepreneurial skills, democracy etc., India is poised to dominate the global economy in the next 20 years.

AIM OF THE RESEARCH

This paper aims at studying the awareness and preference of younger generation towards green homes in Calicut City

The Objectives of the study are

- To know the awareness level of new generation towards green technologies used in homes
- To know their preference of new generation towards living in green homes

HYPOTHESES

The following hypotheses were formed for testing

Hypotheses

- H_0 : There is no significant difference among different age groups with regard to awareness about energy efficiency among Gen Y
- H_0 : There is no significant difference among age groups and awareness about water efficiency level among Gen Y
- H_0 : There is no significant difference among age groups and awareness about waste reduction technique among Gen Y
- H_0 : There is no significant difference among age groups and awareness about the use of low energy/ recycled materials among Gen Y
- H_0 : There is no significant difference among age groups and awareness about kitchen garden among Gen Y
- H_0 : There exists no association between awareness level and preference of green homes amongst Gen Y

REVIEW OF LITERATURE

Eves & Kippes (2010), in his paper examined the buyer awareness and acceptance of environmental and energy efficiency measures in the New Zealand residential property markets. The study aims to provide a greater understanding of consumer behaviour in the residential property market in relation to green housing issues. The paper is based on an extensive survey of Christchurch real estate offices and was designed to gather data on the factors that were considered important by buyers in the residential property market. The survey was designed to allow these factors to be analysed on a socio-economic basis and to compare buyer behaviour based on property values. Many of the voluntary measures introduced by Governments to improve the energy efficiency of residential housing are still not considered important by buyers, indicating that a more mandatory approach may have to be undertaken to improve energy efficiency in the established housing market, as these measures are not valued by the buyer.

Anvar & Venter (2014), in his study determined what factors influence attitudes and purchase behaviour of green products among Generation Y consumers in South Africa. The factors that were under investigation in the study were social influence, environmental awareness and price. Further, this study aimed to investigate whether consumer attitudes can in fact influence consumers' purchase behaviour of green products. A quantitative approach was used for data gathering. Data collection was conducted by means of self-administered questionnaires among 200 students between the ages of 18 to 23. The data was analysed by using statistical methods such as simple and multiple linear regressions. The results from the study indicated that social influence, environmental awareness and price, positively influence individuals' attitudes towards green products. The effect of attitude on buying behaviour was also positive; hence consumers with positive attitudes towards green products are more likely to purchase green products. Further, the findings indicated that there is indeed a difference between males and females with regards to buying behaviour of green. The findings of the study will provide marketers with a clearer understanding as to how they can influence Generation Y's attitude and buying behaviour towards green products. With the Generation Y cohort being of crucial importance to marketers, companies can

drive sales and increase market share through appropriate marketing strategies.

Booklaky, Abuamer, & Mehrnaz (2015), in his paper discusses Green Buildings from the perspective of the local consumers of Abu Dhabi city. Various elements of consumer preferences towards green buildings are evaluated in order to gauge their marketability in Abu Dhabi real estate market and the level of competition in the area. One of the research main themes is to evaluate existing Green Building support and recommending future anticipated support to boost the growth of the green construction industry. Primary data was collected through face to face interviews using a convenience sample of sixty respondents. This study has shown that Green Buildings are marketable products with their own marketable features; marketing tools sometimes are different from the tools used to market conventional buildings. Taken together, the study recommends stakeholders to invest more in green construction that will ultimately lead to solid growth in the industry of Green Buildings.

Jusoh & MD (2015), in his study examined consumers' preference on green home attributes in Peninsular Malaysia defined by carbon dioxide (CO₂) emission, rainwater harvesting system, natural air ventilation, and greeneries area. Self-administered questionnaires were used to obtain necessary data from 300 selected households through stratified random sampling in Kajang and Bandar Baru Bangi, Selangor, located in central west of Peninsular Malaysia using questionnaires through face to face. The choice model technique was applied to estimate the non-market values for this study. The results show that all the attributes are tested significant in generic form, while only three are tested significant in label form. Two attributes are tested insignificant which is rainwater harvesting system and greeneries area in label form. The estimated implicit values for green home attributes based on Multinomial Logit regression shows that natural indoor air ventilation is the most important attribute. This is followed by green areas, carbon dioxide (CO₂) emission and rainwater harvesting system. The findings also reveal that Malaysian society preferred green home as compared to conventional housing based on the attributes. Finally, the study highlighted several recommendations for households, developers and government to stimulate the green home development in Malaysia. Future work should examine the possibility of other attributes effect to Malaysian consumers'

Oliver, Volschenk & Smit (2011) aimed at analyzing consumers' pro-environmental behaviour, psychographic characters such as knowledge, awareness, values, attitudes, perceptions and concerns for the environment are more reliable than demographics characters

Rao & Vijayalakshmi (2015) in his study asserts that Generation Y has been raised within a time period where they have constant access to technology. Computers, mobile phones, the internet were all accessible and part of their youth. Generation Y are those who are born between 1980 and 1999. The Generation Y values sustainability, this conceptual study is undertaken with the objectives of studying the characteristics of Indian Generation Y workforce and to suggest strategies to manage Indian Generation Y workforce. The Generation Y values sustainability are flexible, mobile, collaborative and unconventional. The Generation Y is flexible, mobile, collaborative and unconventional.

Narrowing down the review it was found that no such study focusing on the awareness level of Gen Y on Green homes in Calicut city has been conducted and hence an effort is made to fill the research gap.

SIGNIFICANCE OF THE STUDY

The literature review reveals that there have been researches conducted in areas of awareness and acceptances of environmental efficiency measures, level of awareness for the sustainable housing concept in Malaysia, attitude and purchase behavior of green products among Generation Y consumers in South Africa, elements of consumer preferences towards Green Buildings in Abu Dhabi, Consumers preference on Green Homes attributes in Peninsular Malaysia etc. From the above review it is clear that there is a gap with regard to the awareness and preference level of new generation (GenY) towards Green Homes in Calicut city. This research makes an attempt to understand the awareness and preference level of Gen Y of Calicut city towards Green Homes

RESEARCH METHODOLOGY

A simple random sampling technique was adopted to select the respondents. The sample size was restricted to 120 people to the age group of 16 years and 35, from different parts of Calicut city. The sample consisted of new generation people (Gen Y) belonging to different educational qualification, age, and monthly income. On the basis of the responses of the questionnaire, analysis has been carried out to identify the awareness of green technologies as well as their preference level towards green homes.

The first part of the questionnaire measured the demographic variable like age, income, occupation, while in the second part the factors influencing the awareness among the young generation was analysed. For finding out the awareness of green homes among young generation, 5 point Likert Scale were administered. These questions consisted of 5 constructs which were : Energy efficiency, Water efficiency, Waste reduction techniques, Use of low energy/ recycled materials and Use of Kitchen garden. The significant difference between two variables (each constructs and age) were tested. Reliability was tested by conducting a Cronbach's alpha coefficient analysis. In order to find out the preference of green homes among Gen Y, chi square was conducted to measure the association between awareness and preference of green homes.

SOURCES OF DATA

Secondary Source

Journals, Websites, Magazines and newspapers, libraries.

Primary Source

A structured questionnaire was administered to the respondents. The nature of questions were open ended, close ended, multiple choice and dichotomous questions.

STATISTICAL TECHNIQUES USED

Percentage analysis, ANOVA and Chi-square test

ANALYSIS OF THE RESULTS

Demographic Profile

The respondents belonged to different age groups, holding different educational qualifications and falling under different social status of the society. The people selected under study is in the age group of 15 to 35 years. The people interviewed were plus two students, degree, post graduate and research students. And they have a gross family income of Rs. 20,000 to Rs. 60,000 per month and monthly employee income ranging between Rs.15, 000 to Rs.50, 000.

Sources of Information about Changes in Climatic Conditions

In order to know the effects of Climatic changes, the respondents depend on various sources like Television, Friends, Relatives, Internet etc. The following table gives the percentage of respondents depended on various sources.

Table 1: Sources of Information About Changes in Climatic Conditions

Particulars	Number	Percentage
Television	47	42
Friends	10	9
Relatives	7	6
Internet	7	6
Television & Internet	29	26
Television, Friends & Internet	5	4
Television & Friends	4	4
Television, Friends, Relatives & Internet	3	3
Total	120	100

Source: Survey data

From this table it is clearly evident that 42% of the new generation depend exclusively on television on getting awareness of climatic changes. It was found that 26% of the respondents depend on both Television and Internet, 9% of the respondents get such awareness of climate changes while chit chatting with their friends, 6% of the respondents get informed through internet and by talking to relative. Only 4% of the respondents depend on Television and Friends & Television, Friends and Internet. A very less percentage of respondents (3%) depends on all the sources together

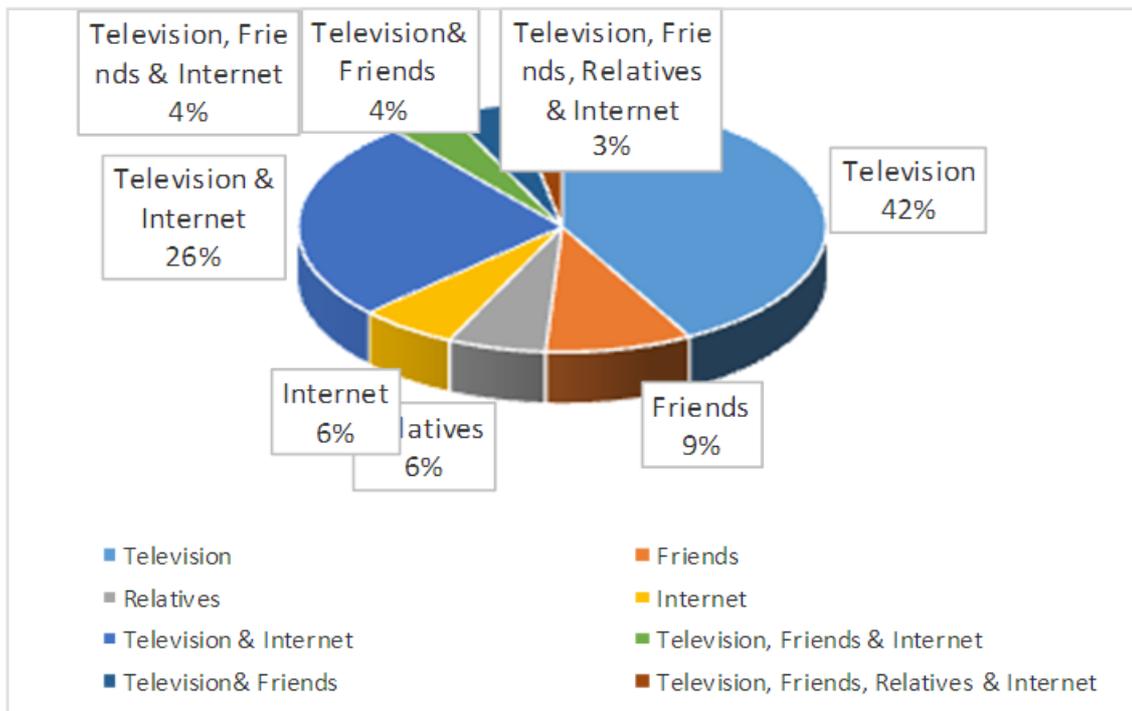


Figure 1: Awareness of the Sources of Information about the Effects of Climate Changes

Awareness about the Effect of Climatic Changes

Various effects of climatic changes like increase in green house gas concentration, loss of sea ice, accelerated sea level rise, etc., were asked to the respondents. The table below shows the percentage of respondents

Table 2: Awareness about the Effect of Climate Changes

Awareness of Various Effects of Climate Changes	Number	Percentage
Increase in greenhouse gas concentration	15	13
Loss of sea ice	9	8
Accelerated sea level rise	10	9
More intense heat waves	12	11
Drought	9	8
Rise in temperature	19	17
Reduction in ground water level	15	13
Pollution (Air & Water)	23	21
Total	112	100

Sources: Source: Survey data

Regarding the awareness of the new generation of the effects of climatic changes, it was found that 21% of the respondents are aware of water and air pollution while around 17% are aware of the rise in temperature level. It was found that 13% of the respondents are aware of both increase in greenhouse gas concentration and reduction in ground water level, 11% of the respondents are aware of intense heat waves, 8% of the respondents selected are only aware of droughts. And it was also found only 9% and 8% of the respondents are aware of accelerated sea level rise and loss of sea ice. It was found from the survey that 98% of the respondents are aware of this condition of the environment and feel responsible and says that they are ready to contribute to reduce the negative impacts irrespective of their age, education and their occupation.

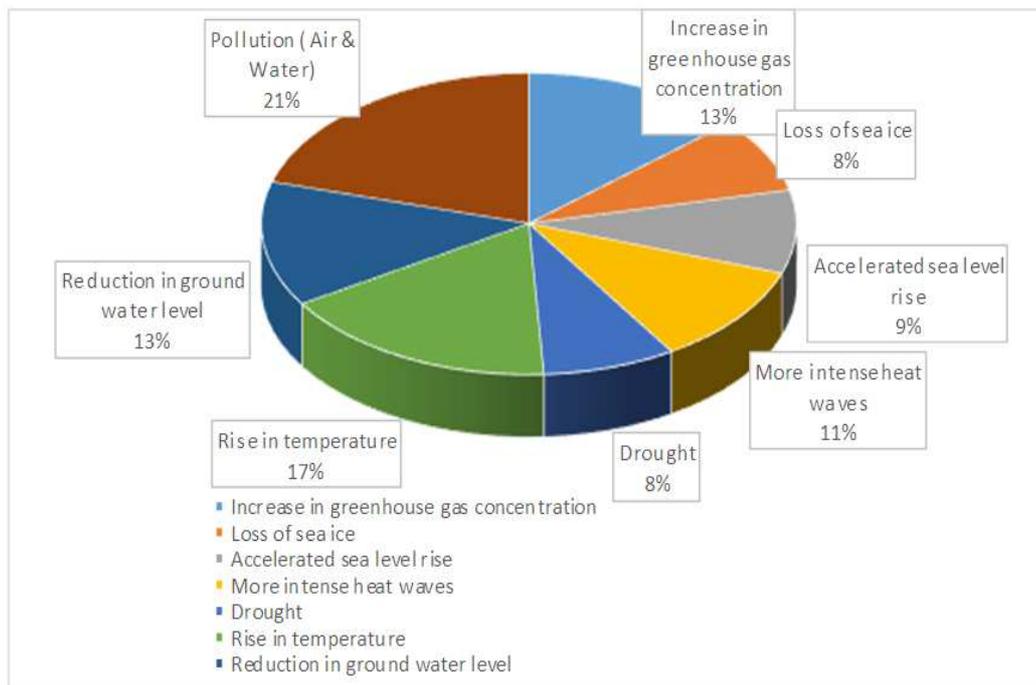


Figure 2: Awareness about the Effect of Climate Changes

In the second part of the analysis, the researchers checked the reliability of the scale and the instrument used for data collection by working out Cronbach alpha which is a ratio very much similar to correlation coefficient, whose value should be more than 0.7 to judge a scale or questionnaire to be most reliable. The current workouts in table-3 show the alpha to be 0.737 indicating the scale and questionnaire are reliable and are implementable.

Table 3: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.737	.755	5

In the next part of the analysis, an attempt was made to find out significant difference between various factors by developing the hypotheses. The factors taken were Energy efficiency, Water efficiency, Waste reduction techniques, Use of low energy/recycled materials and awareness about Kitchen garden.

Table 4: Result of ANOVA

Factors	Age	N	Mean	SD	F Value	P Value	Remark
Energy Efficiency	15-20	28	14.28	4.46	6.422	.001	H ₀ is rejected at 1% level of significance
	21-25	28	15.39	3.35			
	26-30	28	15.57	3.22			
	31-35	28	11.57	4.22			
Water Efficiency	15-20	28	10.21	3.07	1.110	.348	H ₀ is accepted at 5% level of significance
	21-25	28	10.82	2.94			
	26-30	28	10.17	3.69			
	31-35	28	11.50	2.70			
Waste Management Techniques	15-20	28	25.21	6.63	.138	.937	H ₀ is accepted at 5% level of significance
	21-25	28	25.46	5.58			
	26-30	28	24.42	6.81			
	31-35	28	24.96	6.09			
Use of Low energy/recycled materials	15-20	28	10.03	3.97	3.080	.031	H ₀ is accepted at 1% level of significance
	21-25	28	12.82	4.69			
	26-30	28	12.96	4.49			
	31-35	28	13.11	4.52			
Kitchen Garden	15-20	28	7.07	2.69	.929	.429	H ₀ is accepted at 5% level of significance
	21-25	28	7.78	2.23			
	26-30	28	7.50	2.22			
	31-35	28	6.78	2.67			

Source: Survey data

From the table it was found that Hypothesis 1 is rejected while , Hypothesis 2, Hypothesis 3 Hypothesis 4 and Hypothesis 5 were accepted, which imply that there is a significant difference between age and awareness about energy efficiency. Here in the case of energy efficiency p value = .001. It is evident that in the case of awareness regarding use of star rated appliances, LED lamps, solar panels and solar water heaters is less for Gen Y when compared to the awareness of other factors like water harvesting, waste management techniques, use of low energy /recycled materials and kitchen garden. In the case of Hypothesis 2 on water efficiency (p value = .348), Hypothesis 3 on waste management techniques (p value = .937) Hypothesis 4 on use of low energy/recycled materials (p value = .031) and Hypothesis 5 on kitchen garden(p value = .429), there is no significant difference between age and awareness among Gen Y.

Post Hoc Test – Energy Efficiency

From the result of ANOVA, significant result was found out. In order to find the exact difference Scheffe Post hoc was conducted

Table 5: Multiple Comparisons
Dependent Variable : Energy Efficiency

(I) Age of the Respondents	(J) Age of the Respondents	Mean Difference (I-J)	Std. Error	Sig.
15-20	21-25	-1.10714	1.03001	.764
	26-30	-1.28571	1.03001	.670
	31-35	2.71429	1.03001	.080
21-25	15-20	1.10714	1.03001	.764
	26-30	-.17857	1.03001	.999
	31-35	3.82143*	1.03001	.005
26-30	15-20	1.28571	1.03001	.670
	21-25	.17857	1.03001	.999
	31-35	4.00000*	1.03001	.003
31-35	15-20	-2.71429	1.03001	.080
	21-25	-3.82143*	1.03001	.005
	26-30	-4.00000*	1.03001	.003

Source: Survey data

*. The mean difference is significant at the 0.05 level.

As it was found that there was a significant difference between age and awareness among Gen Y. It was found that there was a significant difference between the age group 21-25 and 31-35. It was also found that there was a significant difference between the age group 31-35 and 26-30

In the last part of the analysis, Chi square was conducted to know the association between awareness level and preference of green homes among Gen Y. The Hypothesis was :

H₀: There is no association between level of awareness and preference of green homes among Gen Y

The result of this testing is as follows:

Table 6: Level of Awareness and Preference Towards Green Homes

Preference	Level of Awareness			Total	Chi Square Value	p Value
	High	Average	Low			
Preferred (Yes)	22 (22.0%)	54 (54.0%)	24 (24.0%)	100	4.848	0.089
Not Preferred (No)	6 (50.0%)	5 (41.7%)	1 (8.3%)	12		
Total	28 (25.0%)	59 (52.7%)	25 (22.3%)	112		

Source: Survey data

Table 5 shows the chi square value as 4.848 with the p value .089. Since the p value is greater than 0.05 the null hypothesis is accepted at the 5% level of significance. Hence it is concluded that there is no association between level of awareness and preference towards green homes among the gen Y. This indicates that even though they are less aware of various green technologies adopted for the construction of green homes, they do prefer to construct such type of homes which will definitely help in the conservation of natural resources.

Levels of Respondents Preference Towards Green Homes

The preference of respondents regarding green homes can be easily understood, if it is divided into different levels. The preferences are divided into three levels based on “ Quartile Deviation”. They are Low, Moderate and High levels. Q₁, the first (lower) quartile splits off the lowest 25% of data from the highest 75%, Q₂ second quartile, median, cuts the data set in half and Q₃, the third (upper) quartile, splits off the highest 25% of data from the lowest 75%.

The table shows that among the respondents with the preference towards green homes, 22.0 per cent are at low

level, 54.0 per cent at average level and 24.0 per cent at high level. Similarly among the respondents who haven't the preference towards green homes, 50.0 per cent are at low level 41.7 per cent are at average level and 8.3 per cent are at high level. Thus it is clear that the awareness towards green homes and the preference towards them isn't associated well.

FINDINGS

- It can be inferred that a large percentage (42%) of young generation depend exclusively on television on getting awareness of climatic changes, while 26% of the respondents depend on both Television and Internet. It was found that 9% of the respondents got such awareness of climate changes while chit chatting with their friends, 6% of the respondents got informed through internet and by their relatives. Only 4% of the respondents depended on Television, Friends & Television and Friends & Internet.
- Regarding the awareness of the effects of climatic changes among Gen Y , it was relaised that majority (19%) of the respondents are aware of water and air pollution while around 17% are aware of rise in temperature level. It was found that 13% of the respondents are aware of other climatic changes such as increase in greenhouse gas concentration and reduction in gound water level, 11% of the respondents are aware of intense heat waves. It was understood that only 10% are aware of droughts and only 9% and 8% of the respondensts are aware of accelerated sea level rise and loss of sea ice.
- It was found from the survey that 98% of the respondents are aware of this condition of the environment and feel responsible and says that they are ready to contribute to reduce the negative impacts irrespective of their age, education and their occupation.
- There is significant difference among different age group with regard to the awareness of energy efficiency among Generation Y. i.e with a difference in age group the awareness regarding energy efficiency is found to differ. It was found that there was a significant difference between the age group 21-25 and 31-35. It was also found that there was a significant difference between the age group 31-35 and 26-30
- This is no significant difference among different age group with regard to the awareness of water efficiency,waste management techniques and kitchen garden among Generation Y
- With regard to the use of low energy/recycled materials among Generation Y, there is significant difference among different age group
- There is no association between level of awareness and preference of green homes among Gen Y.

CONCLUSIONS

By 2025, members of Generation Y will make up 70% of the global workforce. For a country like India where majority of the population is young, it is always highly essential to provide proper awareness campaigns. As our environment is facing critical climatic changes, it becomes our responsibility to protect the environment and adopt and install various green technologies which will help to conserve energy, reduce, re use and recycle materials.Kerala is a state having high literacy rate. Since there is readiness among the younger generation to prefer green homes, it becomes the responsibility of the concerned authority to provide as much solutions as possible to its adoption. The green materials must be made readily available to the society. Since this paper is an attempt to know the awareness of Gen Y about green homes,

it becomes the responsibility of the government and the concerned authorities to provide those facilities which will definitely help to reduce the adverse impact on our environment and develop various strategies in reducing the usage of resources to some extent.

SUGGESTIONS

- As the younger generation is depending more on Television and Internet, various awareness programmes to promote the use of green technology should be disseminated through that media.
- Some clips, documentaries which takes less time, but provides awareness of green products should be shared through social media groups.
- In order to create awareness among the younger generation, campaigns must be conducted by the educational institutions, companies etc.
- Government should play an important role in the formulation of plans encouraging the usage of green technologies in the construction of green homes and its implementation.
- Compulsory Inclusion of topics on conservation of energy and green technology in syllabus of degree and post graduate level education has become a must nowadays to make them realize how to use the scarce resources intelligently.
- Campaigns and workshops should be conducted to equip the younger generation to indulge in green technology businesses and to make green products
- There is a false impression among the people that green products are highly priced. It should be done away by making it available at reasonable prices. Definitely this initiative will encourage the young generation to use green products and technologies while they decide to construct their own home.

REFERENCES

1. Anvar, M., & Venter, M. (2014). Attitude and Purchase Behaviour of Green Products among Generation Y Consumers in South Africa. *Mediterranean Journal of Social Sciences*, 5(21), 183-194.
2. Boolaky, Abuamer, E., & Mehraz. (2015). Consumer Behavior towards Green Building: A Study in Abu Dhabi. *International Journal of Business Administration*, 6(3), 72-85.
3. Eves, C., & Kippes, S. (2010). Public awareness of green and energy efficient residential property: An empirical survey based on data from New Zealand. *Property Management*, 28(3), 193-208.
4. Jusoh, & MD, Z. (2015, September 13). Preferences on Green Home Attributes among Malaysian Households. *Journal of Research in Business, Economics and Management*, 4(2), 323-333.
5. Oliver, H., Volschenk, J., & Smit, E. (2011). Residential consumers in the Cape Peninsula's willingness to pay for premium priced green electricity. *Energy Policy*, 39(2), 544-550.
6. Rao, P. B., & Vijayalakshmi Urs. (2015, October). The Gen Y workforce of India. *International Journal in Management an Social Science*, 3(10), 186-192.

7. www.initiafy.com/news/how-does-construction-impact-the-environment
8. <https://en.wikipedia.org/wiki/Quartile>