

Climate Literacy and Individual Consumption Behavior: An Evaluation of the Indian Experience

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Abstract

Climate change education and awareness are essential for any effective action on climate change. While regulatory policies and taxes influence consumer behavior, these measures are significantly more successful when the stakeholders are made aware of the larger policy objective underlying such measures, especially the exact extent and nature of the impact of climate change, if Greenhouse Gas (GHG) emissions continue unabated as also the significant effect small everyday individual choices can have on reducing the individual GHG emissions. This paper will examine the extent of awareness regarding the causes and consequences of climate change as also the government programs and policies for climate change mitigation and adaptation. It will also evaluate the effect of climate literacy on individual consumption habits and attitudes towards climate change mitigation and adaptation. The methodology adopted in this research paper will be empirical and analytical and the authors will collect primary data through the means of a questionnaire administered to a random sample of 300 respondents belonging to the age group of 18 – 75 years, selected from urban areas in India. The research paper shall show the relationship between lack of climate literacy and high GHG emissions through individual consumption habits and behavior and make recommendations for increasing climate literacy in India through effective outreach programs.

Keywords: Climate Literacy, Individual Carbon Emissions, Consumption Behavior, Attitudes to Climate Change

1. Introduction

“Climate change” is defined as “a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity” (IPCC, 2007). The awareness regarding this phenomenon and its reasons and consequences is known as climate literacy. The “United Nations Framework Convention on Climate Change (UNFCCC)” imposes an obligation on states to organize and implement educational and public awareness programs regarding climate change to ensure greater public participation in addressing climate change. This is expected to have significant outcome since each individual’s consumption and choices determine the overall GHG emissions of a country. While regulatory policies and taxes influence consumer behavior, these measures are significantly more successful when the stakeholders are made aware of the larger policy objective underlying such measures, especially the exact extent and nature of the impact of climate change, if GHG emissions continue unabated as also the significant result small everyday individual choices can have on reducing the individual GHG emissions. An effective climate change outreach program must provide information about the reasons for climate change and its

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associated risk, while providing specific information on how individuals can contribute to climate change mitigation efforts. This is expected to enhance government accountability with regard to efforts for reducing effects of climate change, reduce the cost of their implementation and also lead to adoption of attitudes and behaviors consistent with reducing individual GHG emissions. According to World Bank data India has a low per capita average of 1.73 metric tons of carbon dioxide emissions annually compared to a per capita average of 16.49 mtCo₂ emissions annually in United States, 15.37 mtCo₂ emissions annually in Australia, 7.54 mtCo₂ emissions annually in China, 6.5 mtCo₂ emissions annually in United Kingdom and a world per capita average of 4.97 mtCo₂ emissions annually (World Bank, 2019). However, while the world per capita emissions and the per capita emissions of these countries is reducing each year, India's and China's emissions are growing. In India, the increase in per capita emissions can be attributed to increased industrialization, urbanization and electrification of rural areas. Since these activities will continue in the coming years, the per capita emissions of India will also continue to rise, despite the fact that India has the "largest renewable capacity expansion program in the world" (India's INDC, 2019). It is also notable that individual GHG emissions in urban areas are expected to be significantly higher than India's average per capita emissions due to increased access to resources.

A recent World Bank has identified India as being on a very high risk of impact from climate change with increased extreme weather events such as severe droughts and costal flooding becoming very frequent (World Bank, 2013). Another study indicates that India will bear a disproportionate economic burden of 20% due to global climate change and will suffer the highest social cost of carbon in the world (K. Ricke, 2018). As a result of its obligations under the Paris Agreement, India intends to reduce its emissions intensity (carbon emissions as percentage of GDP) by 33-35 percent by 2030 as against 2005 levels and has taken several initiatives to address the issue of climate change challenges (India's INDC, 2019). India has also adopted a National Action Plan on Climate Change (Government of India, 2008) that includes eight national missions designed to address climate change adaptation to effects of climate change and mitigation. These include the "National Solar Mission" (Solar Energy Corporation of India Ltd.), "National Mission for Enhanced Energy Efficiency" (National Mission for Enhanced Energy Efficiency), "National Mission on Sustainable Habitat" (Ministry of Housing and Urban Affairs), "National Water Mission", "National Mission for Sustaining the Himalayan Ecosystem", "National Mission for a Green India" and "National Mission for Sustainable Agriculture". In these circumstances, climate literacy is essential for adoption of efforts for reducing effects of climate change friendly attitudes and reduce individual GHG emissions especially in urban areas.

2. Methodology

This paper examines the extent of awareness regarding the reasons and consequences of climate change as also the government programs and policies for climate change "mitigation and adaptation". It also evaluates the impact of climate literacy on individual consumption habits and attitudes towards climate change "mitigation and adaptation". The methodology adopted in this research paper is

empirical and analytical and the authors have collected primary data through the means of a questionnaire to evaluate the extent of awareness regarding the reasons and consequences of climate change, government programs and policies as also the impact of climate literacy on individual consumption habits and attitudes. The questionnaire was administered to a random sample of 300 respondents belonging to the age group of 18 – 75 years, selected from urban areas in India. The questionnaire had a total of 76 questions and the questionnaire was divided into four parts.

1. Part I had 12 questions (1-12) related to awareness regarding reasons of climate change. Scores were assigned to all questions with 1 point for each response indicating awareness regarding reasons for climate change.

2. Part II had 9 questions (13-21) related to awareness of risks associated to climate change. Scores were assigned to all questions with 1 point for each response indicating awareness of risks associated to climate change

3. Part III had 12 questions (22-33) related to awareness regarding India's response to climate change. Scores were assigned to all questions with 1 point for each response indicating awareness regarding India's response to climate change.

4. Part IV had 43 questions (34-76) related to individual consumption behavior. Scores were assigned to question number 36-75 with 1 point for each consumption habit or behavior that contributes to reduction of individual GHG emissions. Questions number 34,35 and 76 had no points associated with them.

3. Discussion and Findings

3.1 Age of Respondents

As can be seen from the chart below majority of the respondents were from the younger age groups with 56% of the respondents from the age group of 18-27 years of age and 18% of the respondents from the age group of 28-37 years of age.

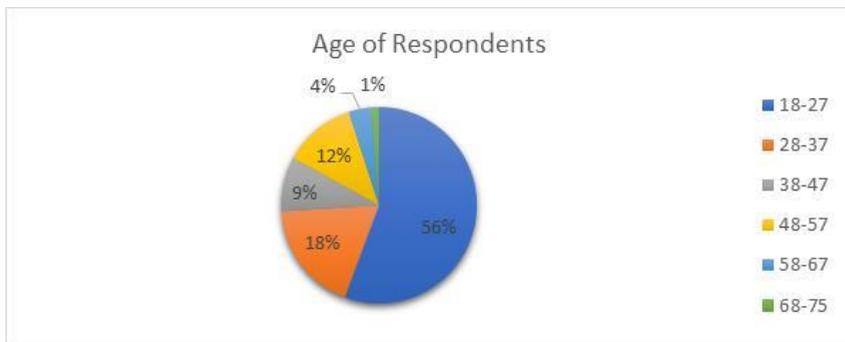


Chart 3.1

3.2 Awareness regarding causes of climate change

3.2.1 Analysis of Awareness regarding causes of climate change

As can be understood from the chart below more than 90% of the respondents are aware of the basic science behind global warming and climate change. However, more than 40% are not aware that India is one of the top 5 emitters of GHG's in the

world. More than 37% are not aware that biodegradable plastic contributes to climate change.

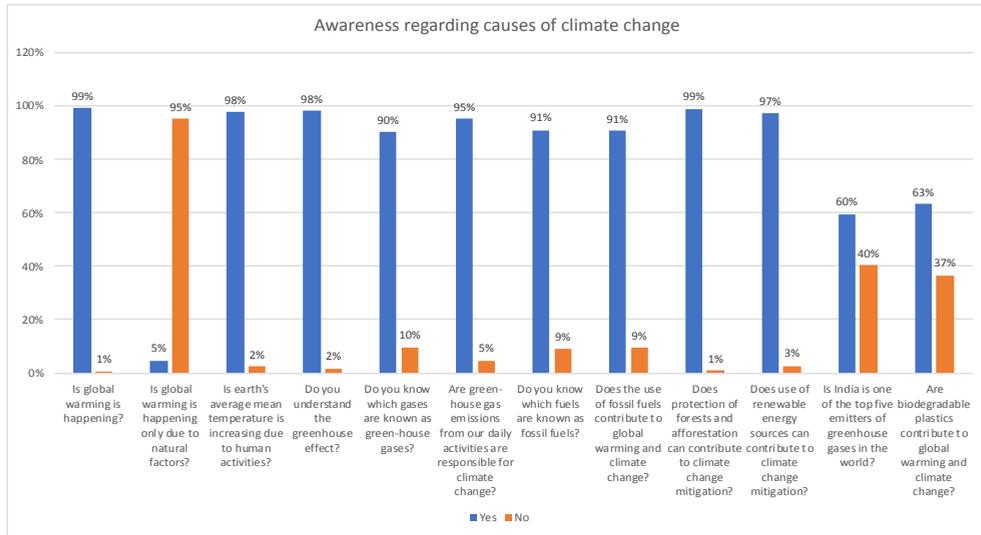


Chart 3.2.1

3.2.2 Score on Awareness of causes of Climate Change

The 12 questions relating to awareness regarding causes of climate change were scored with 1 point for each answer indicating awareness regarding of causes of Climate Change. As can be understood from the table and chart below awareness levels were very high with more than 66% respondents scoring 11 or above out of 12. The mean average score in awareness regarding causes of climate change was 10.77 and median score was 11. It can be seen that female respondents scored higher in awareness regarding causes of climate change against their male counterparts.

Table 3.2.2:

Score on Awareness of causes of Climate Change	Number of male respondents	Number of Female respondents
3	0	2
6	1	0
7	1	1
8	4	4
9	9	16
10	29	31
11	54	54
12	45	49

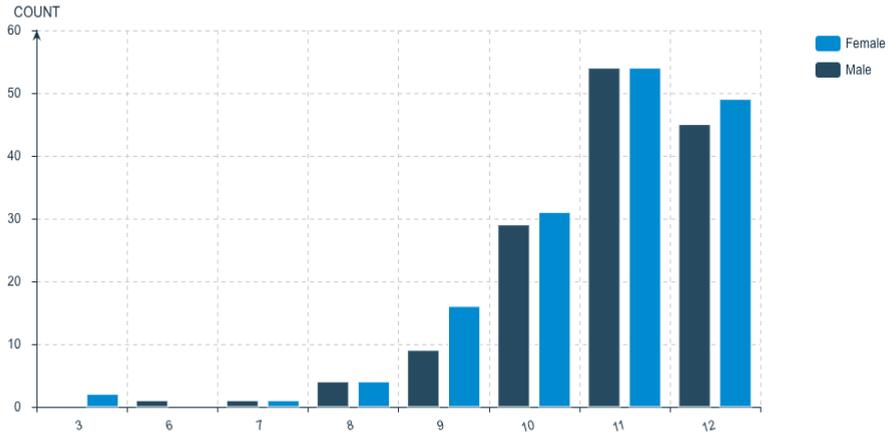


Chart 3.2.2

3.3 Awareness regarding risks associated to climate change

3.3.1 Analysis of Awareness regarding risks associated to climate change

As can be seen from the chart below more than 94% of the respondents are aware of the risks associated to climate change. However, more than 50% of the respondents are not aware of the Intergovernmental Panel on Climate Change, more than 70% of the respondents have not read the 2018 IPCC special report on Global warming and more than 60% of the respondents are not aware of the meaning of ‘Intended Nationally Determined Contributions’.

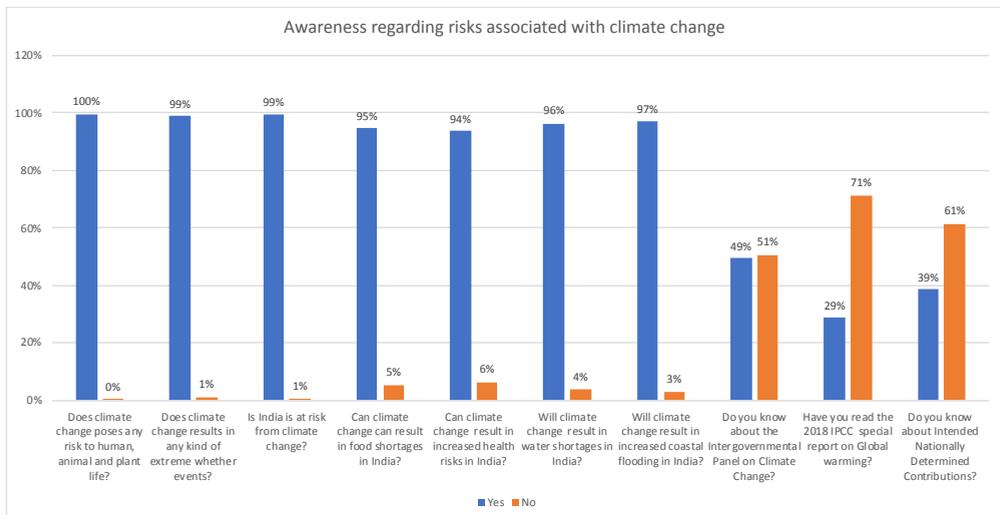


Chart 3.3.1

3.3.2 Score on regarding risks associated to climate change

The 10 questions relating to awareness regarding risks associated with climate change were scored with 1 point for each answer indicating awareness regarding risks

associated to climate change. As can be understood from the table and chart below awareness levels were high with more than 89% respondents scoring 7 or above out of 10. The mean average score in awareness regarding risks associated to climate change was 7.29 and median score was 7. It can be seen that female respondents scored higher in awareness regarding causes of climate change against their male counterparts.

Table 3.3.2:

Score on Awareness of causes of Climate Change	Number of male respondents	Number of Female respondents
3	1	0
5	3	4
6	13	10
7	65	76
8	61	67

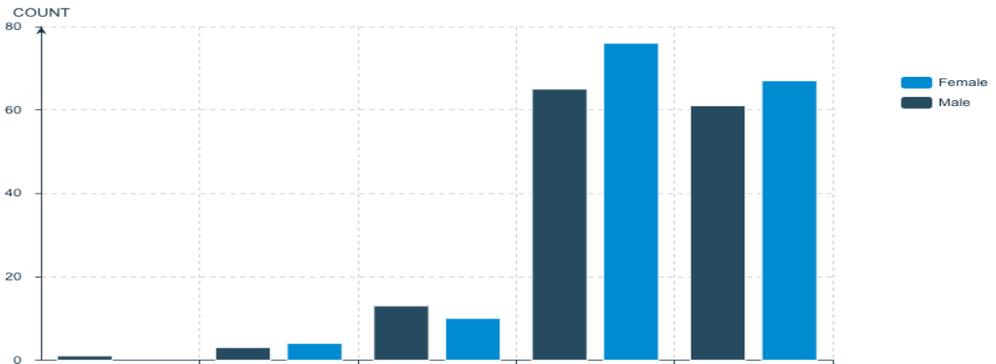


Chart 3.3.2

3.4 Awareness regarding India’s response to Climate Change

3.4.1 Analysis of Awareness regarding India’s response to Climate Change

As can be understood from the chart below awareness regarding India’s response to climate change is abysmally low with more than 70% of the respondents not being aware of India's INDC submission pursuant to the Paris Agreement and more than 50% of the respondents not being aware of India’s flagship “National Action Plan on Climate Change”. Out of the 8 national missions under the NAPCC more than 45% respondents were not aware of 6 of these missions same. With regard to “India's National Solar Mission” there was high awareness with 66% of the respondents being aware of the same. However, this could be a result of the national programs introduced by the previous governments during the 1950’s and 1960’s to promote solar energy due to increase its cost effectiveness in energy generation.

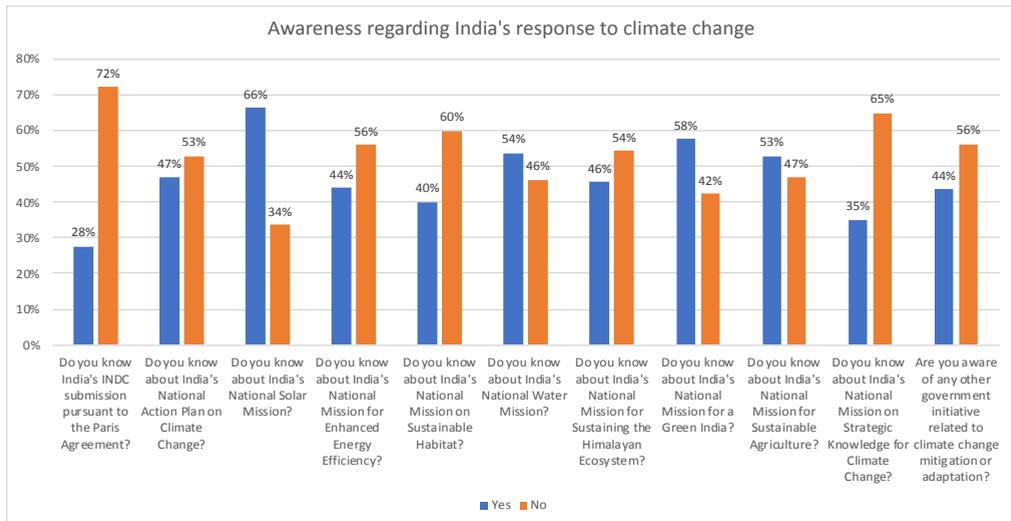


Chart 3.4.1

3.4.2 Score on regarding risks associated to climate change

The 13 questions relating to awareness regarding India’s response to Climate Change were scored with 1 point for each answer indicating awareness regarding India’s response to Climate Change. As can be understood from the table and chart below awareness levels were very low with more than 57% respondents scoring less than 50% with scores of 6 or below out of 13. The mean average score in awareness regarding India’s response to Climate Change was 5.81 and median score was 5. It can be seen that female respondents scored higher in awareness regarding India’s response to Climate Change against their male counterparts.

Table 3.4.2:

Score on Awareness of causes of Climate Change	Number of male respondents	Number of Female respondents
0	19	15
1	11	16
2	14	8
3	11	16
4	5	10
5	12	15
6	6	14
7	14	9
8	12	7
9	7	9
10	3	13
11	6	6
12	10	9
13	13	10

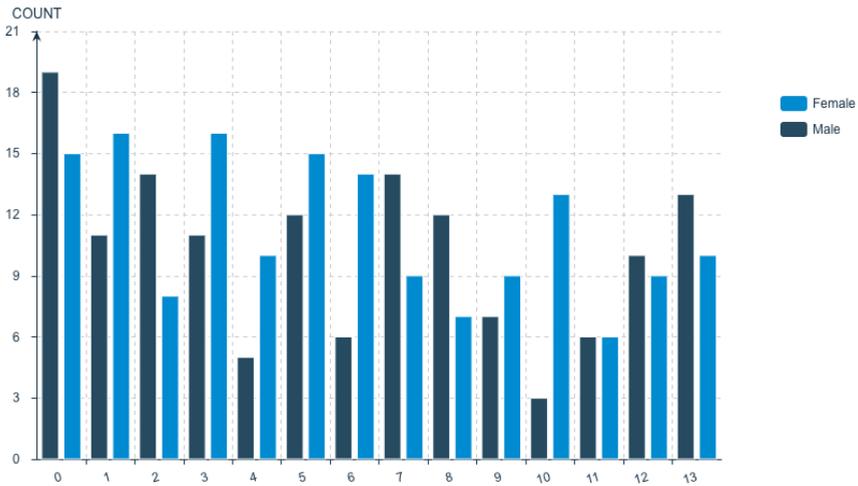


Chart 3.4.2

3.5 Individual Consumption Behavior

3.5.1 Attitudes towards Individual Consumption Behavior

As can be seen from the chart below 92% of the respondents agree that their individual consumption behaviour impacts the total GHG emissions of India, 86% of the respondents actively take steps to reduce their individual GHG emissions and 99% agree that they would make an effort to make environmentally conscious choices if they are educated about the impact of these choices in reducing their GHG emissions.

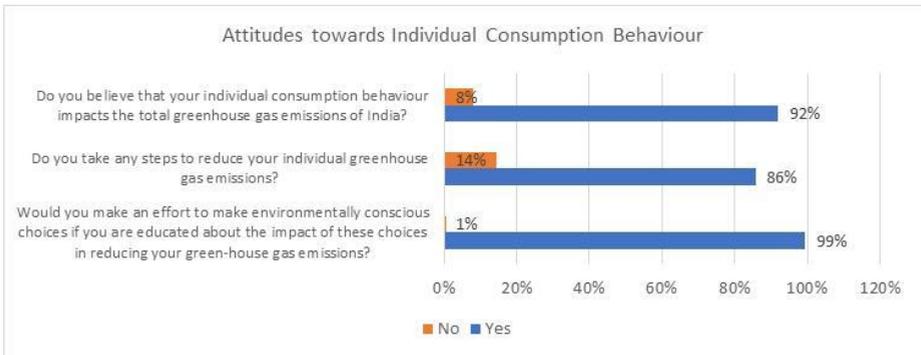


Chart 3.5.1

3.5.2 Individual consumption behavior score

Question number 36 to 75 were used to calculate individual consumption behavior with 1 point associated with choosing activities and behaviors consistent with reducing individual GHG emissions. The maximum points allotted were 40. As can be seen from the table and chart below the highest score obtained was 39, the lowest score obtained was 7, the average score was 29.81 and the median score was 30. It can also be seen that mean consumption behavior score is higher in women respondents and that

more than 60% of the respondents scored 75% or above in Individual consumption behavior.

Table 3.5.2:

Individual consumption behaviour score out of 40 points	Frequency	Percentage of respondents
0 -10	1	0.3%
11-20	11	3.7%
21-30	139	46.3%
31-40	149	49.7%

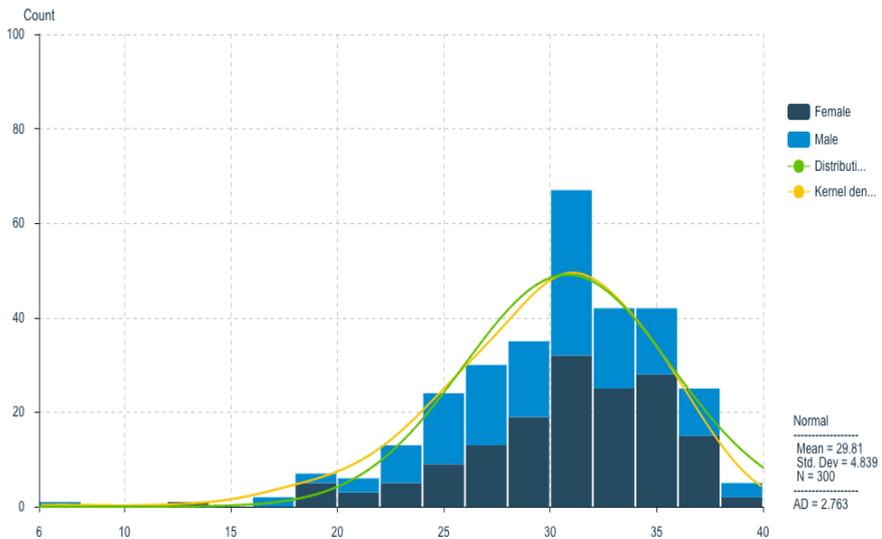


Chart 3.5.2

4. Limitations of the Study

The present study has been restricted to only urban respondents and been conducted in the English language. Further the questionnaire was administered in an entirely paperless manner by relying on google forms. This has resulted in the study targeting only the educated and computer literate individuals situated in urban cities. Computer literacy and access has also resulted in the underprivileged section of the population in urban cities having been excluded. The study also sees a disproportionately large response (more than 50%) from the youth aged 18- 27 years. The awareness quotient of these individuals therefore does not represent the entirety of consumers in India.

5. Conclusion

On the basis of the above discussion it is clear that in urban cities, there is adequate awareness regarding reasons of climate change and risks associated with climate

change. However, knowledge regarding India's international commitments relating to climate change adaptation to effects of climate change and mitigation as well as India's policy response to climate change is abysmally low even in the educated urban population. One reason for the same could be that social media outreach of International organisations addresses both the reasons and consequences of climate change and as such urban computer literate population is aware about the same, however since similar outreach programs are not being conducted by India related to its policies in response to climate change the awareness regarding the same is appallingly low. Further since the school science and environmental education curriculum also deals with the reasons and consequences of climate change, urban youth is aware of the same.

Finally, since more than 90% of the respondents are aware of the threat posed by climate change, their attitudes towards reducing their GHG emissions through their consumption behaviour are also positive with an overwhelming majority of the respondents having shown a commitment to reducing their individual GHG emissions in their everyday lives. Therefore, the authors conclude that climate literacy is very important in influencing individual consumption behaviour and more efforts must be made by the government of India in relation to their policy responses to climate change. Since the awareness as well as consumption behaviour scores of women are higher than men in all categories, there is a need to specifically target men in future climate literacy programs. Further, outreach programs for the uneducated and rural population should also be initiated, through television, radio and social media to target all sections of the population.

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