Climate Change in the Minds of the students of Tripura

Deepak Upadhyaya
Assistant Professor, Department of Journalism and Mass Communication,
Tripura University, Agartala, India
Email:deepak2011upadhyaya@gmail.com

ABSTRACT

It is time Indians get concerned about climate change and global warming. Climate change is likely to have tremendously adverse impact on the Indians, as the country is vulnerable to the worst types of climate change induced natural disasters. Not all possible consequences of climate change has been fully understood by the scientific community, but the three main categories of impacts on India are those on agriculture, sea level rise leading to submergence of coastal areas and increased frequency of extreme natural events This paper focuses on climate change which is widely recognized as one of the most important issues of the present century. But awareness of climate changes issues has been less among Indians even if the country is one of the most carbon dioxide emitting countries in the world, which ranks only after China and America. Hence, this paper attempts to assess the perceptions of climate change among the post-graduate students of Tripura and role of mass media in combating climate change.

Keywords:

perceptions, climate change, mass media, postgraduate students.

1. Introduction:

It was not without reason that the famed *Time Magazine* rang an alarm bell - *"BE WORRIED, Be very much worried"* in the year 2006. This issue of the renowned magazine tried to presage the world public through its cover story on global warming. The year 2006 can be called a watershed year because the issue of global warming gained much media attention which was often ignored by the media. The said story had featured what eventually became the most familiar icon of climate change - a lone polar bear hovering on a floating piece of iceberg, gazing apprehensively at the adjacent sea. The polar bear's iconic status could well be gauged by its recurrent portrayal in visual culture adopted by climate-change communicators across the world since then. However, the term global warming had entered the dictionary of mass media since late 1970s when Paul Valentine contributed a front - page story in *The Washing Post*, on July 21,1977 entitled - "100-Year Trend: Our Summers are Getting Warmer " (*Sachsman*, 2000; as cited by *Neelima* and *Reddy*, 2014).

At present, global warming, also called climate change by the scientific community, is the most debated environmental issue in mass media (*Boykoff* and *Mansfield*, 2009). Currently, our environment is beset with a number of serious problems. Climate scientists have identified global warming as the most significant environmental hazard of our times, as this crisis endangers the existence of the whole biosphere of earth (*UNEP*, 1997). But the question still perseveres: who is responsible for the given imbroglio? Scientists across the globe hold our race guilty for the same.

Global warming is the result of enhanced green house effect caused by the greater accumulation of green house gases in the upper atmosphere. The excessive heating of the earth's atmosphere caused by a high concentration of green house gases in the atmosphere is known as global warming. It is a term which is generally used to refer to the observed enhancement in the average temperature of the earth's atmosphere and oceans over the recent decades. Scientific revelations prove that the world suffered its warmest atmosphere during the last fifty years over a period of hundred years. The global mean temperature has been increasing by leaps and bounds and threatening the health and well being of the planet in the last hundred years (*Mishra*, 2009).

Media's role in Climate Change:

Having presented the context of climate change governance in the above, it is also pertinent to mention that media does matter in any discussion of climate change and can influence both public opinion and policy outcomes at all levels whether it be national or international sphere(*Pavone*, 2010). The media is a mechanism of information diffusion in the society and it has been a diffuser of information regarding climate change ever since the mid twentieth century. *Pavone*, (2010) further implores the fact that mass media was already diffusing climate change information as early as 1930s when he mentions that the *New York Times* (15th May,1932) carried a story that reported - "*The earth is steadily growing warmer…what will happen to man if climate conditions are thus changed ?"* In 1950s coverage had long-drawn-out the possibility of anthropogenic or man - made climate change decades before the issue began making inroads at the UN conferences and summits. However, climate change did not attract much political and public attention in 1960's and 1970s until *James Hansen* , a top NASA scientist created a media storm by his

testimony of 99 percent surety of global warming before the US Senate in 1988 (*Leiserowitz,*2003).

The late 1990s not only saw an increase in the frequency of climate change reporting, but the perspectives also became varied as controversies regarding the science of climate change were also given equal space to accommodate 'skeptics', thanks to the journalistic principles of 'balanced reporting'. The late 1990s was also a watershed period in dissemination of climate change information with the advent of the internet which made possible online, instant publication of research reports and findings of the international research agencies working on global warming issues. Information was no longer confined to the research labs; it began percolating in the civil society. In the mid 2000s, the quantity and quality of global climate change coverage rose at exponential rates - from back pages to front page, from odd time slots to prime time slots. However, stories related to climate change were mainly coloured with disaster frame, as several natural disasters occurred worldwide during this period. Increase in the intensity of record breaking hurricanes and tropical storms placed climate change in newfound focus and western media outlets covered it almost on a daily basis. The devastation caused by Hurricane Katrina - one of the costliest hurricanes in U.S. history, is a case in point which propelled the frequency of climate change reporting to a new high and a new norm.

Leiserowitz (2004) mentions that the issues of climate change made its impressive entrance into the public sphere with the release of the 2004 Hollywood blockbuster- '*The Day After Tomorrow'*. *Leiserowitz* (2004) further reports that the movie had a significant impact on climate change risk perceptions, theoretical understanding of the issue, behavioural intent, policy priorities and even voting intentions of moviegoers compared to survey respondents who did not see the film. In fact the movie had generated a kind of media tempest and debate as scientists, politicians, advocacy groups and political pundits debated the scientific accuracy and political implications of the movie on public perception of the science of global climate change. A similar study conducted in the UK found that viewing the film *The Day After Tomorrow* increased public concern (*Reusswig*, 2005; *Lowe*, 2006). Several studies of the movie indicate that the mass media platforms like movies *The Day After Tomorrow*, *An Inconvenient Truth* and *LiveEarth* can go a long way in launching issues like climate change into the public sphere *(Leiserowitz*, 2004; *Reusswig*, 2005; *Lowe*, 2006; *Leiserowitz*, 2007b). Commenting on the significant role of media as a launch-pad for scientific issues like global climate change among the public, *Reusswig* (2005) observes that:

> *It is doubtful that the creators of the United Nations Framework Convention on Climate Change had Hollywood on their minds when they drafted Article 6, which asks for improved communication and education on the issue of climate change. But the entertainment industry seems to have done quite a lot for the public awareness of climate change.*

Thus media coverage can not only inform the public but also stimulate public opinion in favour of climate change. The media can, in fact, shape the perception of the public about climate change issues and compel individuals to action and demand policy action from their government to address the

problem. In tune with the above, *Bord et al* (2000) found that increased understanding of the climate change issue motives people towards action. *Krosnick et al* (2006) argue that if the public has access to knowledge about climate change, it may bring increased certainty about the phenomenon which in turn increases assessments of national seriousness about climate change, which in turn increases policy support. It has been established that the public relies on the media to gain information about issues like climate change; in this process, the media also renders the role of an educator. This is why *Boykoff* and *Boykoff* (2004, 2007) argue that media reporting is central to the framing of climate change in the public psyche. The authors mention that when individuals are unaware of the causes of climate they are unlikely to develop effective solutions to address it. *Stamm et al* (2000) too mention that the problem of climate change may be less salient to individuals who they do not understand it and these individuals value environmental problems lower than others. Hence, mass media's coverage of climate change issues significantly shapes people's perspectives and can impact people's behaviour. The press and the public can demand a lot from the government to arrest carbon dioxide emissions globally. Climate change interventions is the need of the hour and there is no room any leeway for 'wait and watch strategy', as *The Guardian*, carried a news story (23rd October, 2007) which mentions about a top climate scientist who reported - "global warming is stronger than expected and sooner than expected" (cited by *Gavin*, 2009).

Media exposure has a direct impact on the knowledge and perception of an individual. Research literature suggests that attention to news about global warming increases public knowledge and concern about the issue (*Zhao*, 2009; *Stamm*, 2000; *Krosnick*, 2006).The power of media to set a nation's agenda to focus public attention on a few key issues like climate change is immense and well documented (*Wilson*,1995). What we know about the world is largely based on media. More specifically, the result of this mediated view of the world is that the priorities of the media strongly influence the priorities of the public. The role of media in agenda-setting the adaptation and mitigation interventions regarding climate change issues in the society is worth studying. Our students and youths are the future custodians of the earth, its environment and resources. The penetration of both mass media and new media among the youths is an emerging phenomenon in the society. The youths in any country are the most media savvy segments of the population. In the recent years, a significant number of research works has been conducted measuring public understanding of climate change but not a single one on the perspective of the students in Tripura, Agartala. Post graduate students are future leaders of any society and therefore an inquiry into the perceptions of the postgraduate students in Agartala was sought to be dissected vis-a-vis with the level of mass media exposure by the postgraduate students in Agartala, Tripura. This study aims to expand the existing framework by exploring the possibilities of understanding the perceptions of educated youths and role of mass media in climate change awareness and mitigation engagement in Tripura, India.

2. Review of literature and significance of the study:

The public understanding of many issues is heavily dependent on the representation of the said issues in the mediascape of a nation. This is precisely the reason why mass media has a major influence on public perception on climate change. In a pluralistic system,

the public has many options of media consumption. This choice is influenced by literacy, social background, profession, and any number such influences. Under any circumstances, the media has a large responsibility as providers of information and opinions (*Carvalho,* 2007). Individuals select their own media outlet and form their own opinion. This, in turn, forms a constituent of public opinion. Furthermore, individuals who are or believe themselves to be better informed regarding the risks they perceive, behave differently than those who know little about the risks (*Costa-Font et al*, 2009).

Very little research has been done in India with respect to climate change perceptions. Recently one pioneering study was conducted by *Leiserowitz and Thaker* (2012) entitled- *Climate Change in the Indian Mind*. This pan Indian study was conducted by the Yale Project on Climate Change Communication and GlobeScan Incorporated in November-December 2011 with 138 urban and rural communities in 21 out of the 35 states and union territories in India, covering 98 percent of the Indian population. A total of 4031 adult respondents, aged 18 years or above were selected and interviewed in person by adopting probability sampling methods from four types of strata - first-tier cities included New Delhi, Mumbai, Kolkata and like; second - tier cities included Lucknow, Jaipur, Kochi and like; third- tier cities comprised of Jorhat, Tirupur, Udhampur and like; whereas, fourth-tier strata included respondents from rural areas across India.

The authors have assessed public climate change awareness, knowledge, attitudes, and policy support in India as an extension of multi-country research project. The authors reported that a mere 7 percent of the Indian respondents revealed that they know 'a lot ' about global warming whereas, as many as 41 percent reported either they had 'never heard of it' or 'don't know'. More than 56 percent of the Indians were of the opinion that global warming is caused by 'human activities'. Similarly more than 50 percent revealed that they have already 'personally experienced' the evil affects of global warming. As many as 61 percent mentioned that they were 'worried' about global warming and for more than 67 percent the issue was 'important to them personally'. Majority of the Indians said that monsoon in their local area has become less predictable than in the past. Fewer than half of Indians said droughts, severe storms, and floods have become more frequent. They also revealed that hot days have become more frequent compared to the past. Among the most notable findings of the study, it was revealed that educational level was one of the strongest predictors of climate change awareness in a country like India where there are still 35 percent illiterate populace. Respondents with higher educational qualification were significantly more likely to have heard of global warming than respondents with lesser educational attainment, especially the non-literate.

Regarding the reliability of the sources of communication on global warming, the study reports that as many as 73 percent of the respondents considered the 'scientists' to be the most trusted sources of information on global warming. For about 69 percent, the most trusted sources of information was 'mass media' which is almost equal (68 percent) to environmental 'NGOs'. However, 'family' members and 'friends' were the most reliable sources of information for more than 67 percent of the respondents in India. Less trusted are corporations, local government and state governments. On the contrary, least trusted are the community leaders and religious leaders as a source for information about

global warming. Television was the mostly widely used media source, with 65 percent of respondents of India reporting that they watch television 5 or more days a week, Compared to television usage, it was found that newspapers readers were 54 percent, radio listeners were 25 percent, movies-goers were 21 percent and Internet users were only 18 percent.

Regarding their support for climate and energy policies, *Leiserowitz and Thaker* (2012) mentions that nearly 41 percent of the Indian respondents said that the government of India should be doing more to address global warming. To quote the authors verbatim-

> *38 percent said that India should reduce its own emissions of the gases that cause global warming immediately, without waiting for other countries, 18 percent said that India should reduce its own emissions only if rich countries go first, 13 percent said that India should reduce its own emissions only if all the other countries of the world reduce their emissions at the same time, and 13 percent said India should not reduce its emissions under any circumstances.*

Leiserowitz and *Thaker* (2012) conclude that a large majority of the respondents, nearly 70 percent of them were in favour of a country- wide programmme to teach Indians about global warming in their educational institutions. Apart from this, a majority of the respondents said that policies have to be incorporated immediately so as to reduce wasteful use of energy, water and fuel even if these measures may lead to price rise.

Another sequel of the same study published in 2013 by *Leiserowitz et al* (2013) entitled - *Global Warmings's Six Indias,* found six distinct groups within the Indian public who respond to the threat of global warming in very different ways. The six distinct groups of Indians as revealed by the researchers are - the *Informed*, the *Experienced*, the *Undecided*, the *Concerned*, the *Indifferent* and the *Disengaged* group of Indians. The authors mention that:

> *The Informed (19 percent) are the most aware and convinced of the reality and danger of climate change and highly supportive of national actions to mitigate the threat. The Experienced (24 percent) - the largest of the Six Indias - know less about climate change, but are convinced that it is happening and a serious problem, in part because they say they have personally experienced the impacts more than any other group. Three other Indias - the Undecided (15 percent), the Unconcerned (15 percent) and the Indifferent (11 percent) - represent different stages of understanding and acceptance of the problem. The final India - the Disengaged (16 percent) - have never heard of climate change and have no opinion about it, even when it is described.*

The study further revealed that in whichever of the six groups they were divided, one

thing was common in most of the Indians - those respondents who were living in urban areas claimed to have a higher level of knowledge about global warming than those living in rural areas. When provided with a short description of the phenomenon, more than 74 percent of the respondents in most of the six most groups said that they think global warming is happening. The study also revealed one common fact and that is most Indians believe environmental protection is more important than economic growth. Of all the six groups, the *Disengaged* Indians reported that they 'don't know' the cause of global warming. The *Disengaged* group of Indians comprised mostly of rural and female respondents. Also they were neither literate enough nor had salaried employment or better household incomes. Demographically they were from other backward classes or scheduled castes or tribes.

Chokker, Dua, Taylor, Boyes and *Stanisstreet* (2012) reports the findings of a survey administered to 268 secondary students studying in four English medium schools in Delhi, the capital city of India. With 54 percent males and 46 percent females, the sample consisted of students from middle and upper - middle class families studying in 12th standard. The questionnaire was devised by an international team and was designed to investigate students' willingness to undertake certain specific pro-environmental actions and their beliefs in the efficacy of these same actions in reducing global warming.

The findings revealed that in general Indian students exhibited high level of concern for global warming and expressed considerable willingness to take action against global warming. The findings were further compared with students from grade 6th to grade 10th grade of the same schools. The results were also compared with students of similar age groups in Australia and Spain to decipher the contrast between Indian and Western perceptions. *Chokker, Dua, Taylor, Boyes* and *Stanisstreet* (2012) mentioned that as many as 90 percent of the Indian students thought that global warming is actually happening. The respondents also exhibited high levels of apprehension about global warming; with more than 82 percent reporting that they were either 'very worried' or 'quite worried' about the issue. The majority of the students also reported a high level of knowledge about different issues concerning global warming, with almost 82 percent claiming to know 'a lot' or 'something' about this issue. The students in India advocated fairly strong attitude for environmental protection efforts and over 72 percent of the students claimed to be 'very' or 'quite' environmental friendly in their attitude. In an earlier study, *Chokker, Dua, Taylor, Boyes* and *Stanisstreet* (2011) fielded the same survey instrument with students in the same schools of New Delhi, but junior class (grades 6-10) were also included and found that levels of concern about global warming were higher and keenness to act to remediate it was stronger than was noticeable with the western counterparts. Statistically significant differences between the responses of the seniors and the juniors appeared in their concern about global, though no significant differences appeared among the male and female students. The senior grade students appeared more eager to take certain 'direct' actions to cut greenhouse gas emissions. In particular, about 94 percent students of India indicated they would switch off electrical appliances at home, while as many as 84 percent claimed they would pay more for buying low energy consumption household appliances. Nearly 78 percent of the students revealed that planting trees would help reduce global warming. However, only

about 48 percent students expressed their willingness to use public transportation system. More than 52 percent were ready to pay higher prices for electricity generated from renewable sources.

Simon Billett (2010) can be credited to be one of the few researchers from the West who conducted a study on the representation of global warming in the Indian mass media. He examined how climate science and climate politics are represented and communicated within the bigger Indian context by the mainstream English language newspapers between January 1, 2002 and June 1, 2007. He looked into the coverage of *The Times of India*, *The Hindu*, *The Hindustan Times,* and *The Indian Express.* In addition to conducting a content analysis for the mainstream newspapers of India, the researcher also conducted interviews with prominent environmental journalists of the country.

Billet found that the Indian press is mostly free from any skepticism. On the contrary, media in India considers climate change as a scientific reality. Majority of the articles published in the Indian newspapers directly attributed climate change to anthropogenic causes. Additionally, all the journalists interviewed by the author revealed that anthropogenic climate change has become a reality. The findings clearly suggest that the mass media in India show consensus on the scientific opinion of climate change. Such strong agreement has never been reported in previous research studies conducted even in the context of the Global North (*Wilson*, 2000). By writing an editorial review in Climatic Change- a reputed research journal devoted to the cause, *Boykoff* (2010) refers to the research work conducted by *Billett* and expresses satisfaction on the fact that Indian mass media deserves credit despite working in a "threatened journalistic ecosystem".

The study of Indian print media by *Billett* brings to forefront that climate change discourse is divided between the threat faced by India and the liability of the Global North for this problem - 'cause outside, effect inside' (*Lankala*, 2006). However, the press has 'distanciated' causes and effect of climate change in its coverage in keeping with India's development priorities and challenges and international emission cut demands along the North-South climate debate (*McManus*, 2000).

Vani Sarraju Rao (2010) in her dissertation has studied public perceptions and awareness about global warming in India by conducting a survey on 851 respondents in the city of Hyderabad in 2007. A stratified sample of nine segments of the society has been considered by the author constituting the students of eight colleges (n=167), government employees from seven organizations (n=119), corporate sector employees from five organizations (n=112), employees working in information technology sector (n=109), teachers and academicians from six schools and colleges (n=86), members and office bearers from four NGOs (n=74), educated professionals from five organizations (n=72), journalists from five media organizations (n=57), and home makers from different regions of Hyderabad city (n=55). The study sought to understand whether the residents of Hyderabad have knowledge and understanding on global warming, its seriousness, causes and impacts, the link between energy and environment. The study also focused on what would be the level of willingness to support programmes and initiatives for reduction of global warming.

The results reported that majority of the respondents were aware that global warming was a serious problem which could impact their way of life in the future. However, their level of awareness was lower

concerning the causes and impact of global warming and such terms as fossil fuels and greenhouse gases. Regarding solutions, opinion of the respondents was split almost evenly amongst those who felt that global warming could be addressed through personal actions and those who thought that more drastic measures were needed. Although there was decent support for eco-friendly products and programmes, there was a lack of clarity about ways to address global warming. It was also found that majority of the solutions proposed by the respondents were about increasing green cover in cities, following pollution control rules and a vigorous campaign to increase global warming awareness. The findings by *Rao* (2010) showed the existence of significant differences in levels of awareness about global warming across age, gender, income, occupation and education of the sample considered.

Global climate change is a challenge to entire humanity and the ways and means to combat it are meagre (*Stehr & Storch*, 2005). In spite of this, the people around the world, from policy makers down to individuals, are bogged in a quagmire of conflicting mind-sets of denial, disbelief, reservations or indecision about the extent of the threat and adaptive responses to it. For this reason, perception research on climate change becomes extremely crucial from the students point of view. Proper knowledge and awareness on global warming may help form positive attitudes towards environmental conservation among the students who are major stake holders in the issue and motivate them to take correctional steps to combat it (*Corbett* and *Durfee*, 2004).

In summary, these studies indicate that there is a low level of awareness about the causes and consequences of global climate change in India although public are concerned about the problem. Considering the research gaps, the present study is an exploration into the young educated students of the state of Tripura regarding their understanding and perceived threat about climate change issues and the role of mass media in spreading the awareness.

3. Materials and Methods:

A survey research methodology was adopted for this study. For this purpose, a set of questionnaire has been prepared with close-ended questions. This questionnaire was basically adopted and modified from *'Climate Change in the Indian Mind'*(*Leiserowitz et al*, 2012); *Vani Sarraju Rao*(2011); *Climate Change in the American Mind* and *Global Warmings Six Americas* (*Leiserowitz*, 2008); *Lowe* (2006); *Carvalho et al* (2006); *Whitmarsh* (2005); *Leiserowitz* (2003); and *Lorenzoni & Pidgeon* (2006). The questionnaire also had sections on socio-demographic profile of the respondents. The questionnaire was pre-tested on a small group of students in a pilot basis and depending upon the responses, and incorporating some modifications like translation into Bengali language, a final set of questionnaire was developed for execution.

The researcher has purposively chosen the post-graduate students in various courses in Tripura University. Being the only university in the government sector catering to higher education needs of the citizens of the state, is the culmination point of all students belonging to different, religion, caste, and creed in the state who come down to Agartala to receive higher education. Agartala therefore presents an ideal setting to dissect the perceptions of post - graduates students' awareness on climate change. The primary data has been collected by administering a structured closed ended questionnaire

which consisted of several questions related to general information about the social background of the respondents regarding age, sex, place of birth, social caste, family income, medium of instruction and exposure to environmental education at schools levels. The media habits of the respondents were sought along with several questions to know their knowledge, awareness and practices regarding climate change issues. About 850 questionnaires were distributed among the students from 34 departments under the Faculty of Science and the Faculty of Arts & Commerce in Tripura University. Eventually, 657 fully completed questionnaires were collected from the post- graduate students admitted in the academic session, 2012 and 2013. The sample size of 657 students, consists of 55 percent (n=364) female respondents and 45 percent (n=293) male respondents which represented both the gender almost fairly. Purposive sampling technique has been adopted by the researcher for the study.

4. Results and Discussion:

The findings reveal that although the respondents belonged to apparently good social background, and were from economically well to do middle class families [70 percent (n=454) of the respondents belonging to families having an annual income of more than Rs. 1,80,000.00 per annum] and have exposure to mass media , yet their level of climate change awareness was only average. It can be inferred from the above fact that respondents belonging to the upper section of the social strata, having more access to the mass media outlets, have a lower understanding of climate change. The awareness about climate change doesn't necessarily stem only from mass outlets such as television, radio, newspapers, books or pamphlets but also through interpersonal sources like teachers, family and friends. It was also found out that, though the respondents frequently use new media platforms like the internet, awareness on climate change issues the above medium is on the lower side.

It was also found out from the study that the respondents considered *Climate Change* and *Global Warming* to be two different phenomena. The students were found to be *more familiar with the* term *Global Warming* than *Climate Change*. The awareness about global warming is to the tune of 66.21 percent, whereas about 27.70 percent reported familiarity with the term *Climate Change.* Additionally, the students reported that they were more concerned with *Global Warming* than *Climate Change*. About 82.19 percent students believed that *Climate Change* is *happening* while a small minority of 7.15 percent reported that they *don't believe* in the phenomenon. Interestingly, 10.66 percent enumerated '*Do not know'* as their response.

However, as many as 86.30 percent students reported that they have *heard/seen/read* something on *Climate Change*, while about 92.09 percent students, on the other hand, have reported that they have *heard/seen/read* something on *Global Warming*. Conversely, it was found that 73.06 percent of the students considered that *deforestation is a grave issue* which acts as a natural sink for carbon dioxide. They were also concerned about the dwindling forest cover, which is an encouraging thing. Burning of fossil fuels like petrol, diesel and coal for transportation and functioning of businesses and industry was reported to be the 'very likely' cause of climate change as these sectors are polluting the environment to the maximum possible extent. The results show that the understanding of *Global Warming* and *Climate Change* are essentially different amongst the respondents and they showed more

awareness and concern for *Global Warming*. The media seems to have rake up the topic of *Global Warming* while *Climate Change* was low on their list of priorities thereby creating a discrimination of definition. Since environmental education is mandatory for school and college students as ruled by the honourable Supreme Court of India, it shows that the teachers didn't focus on creating substantial environmental awareness amongst the students despite the policy having taken shape a decade back.

When asked, "How well are you informed about the different causes of Climate Change", 36.22 percent reported that they are 'Not very well informed'. 2.59 percent reported to be 'Very well informed'. Similarly, 38.20 percent reported that they are 'Not very well informed' about the different consequences of *Climate Change* and only 3.65 percent were 'Very well informed'. In a similar vein, 39.57 percent are 'Not well informed' about the different ways in which people can fight climate change whereas, only 5.33 percent are 'Well informed' about how to fight climate change.

The students were found to deem air pollution as the primary reason for climate change, followed by vehicular and industrial emissions. The thing that followed was the burning of fossil fuels. Interestingly, it was found that the students held a misconception that climate change is happening subject to the widening ozone hole caused by rockets and spaceships. Thus, it is apparent that the media has projected the notion that climate change is analogous to ozone-layer depletion. The results also showed significant ignorance about the cause of climate change as well with fictitious things being considered. Thus the media seems to be playing a negative role on the post-graduate students in Agartala as far as climate-consciousness goes.

Concerning the media-related habits, about 52.21 percent of the students read the *newspapers* for 15 minutes to half an hour daily. As many as 38.36 percent of the students read magazines for less than 15 minutes a daily. Additionally**,** 56.93 percent of the students listen to radio for less than 15 minutes daily. 38.96 percent students watch TV/Cinema for one hour to two hours daily. 27.55 percent of the students surf the internet for one hour to two hours daily. It was apparent that most of the students like to watch realty shows than news. Sports news and entertainment news in the newspapers constituted the primary source of interest for the students. 'Mass Media' was reported as the main source of information on both *Climate Change* (56.17 percent) and *Global Warming* (49.01 percent) by the students, whereas, 'New media' like the internet and 'Interpersonal Communication' sources were reported as the main source by almost an equal (12.63 percent and 12.48 percent) number of respondents. Interestingly, 18.72 percent reported 'Do not know' when asked about their source of information on climate change. But in case of *Global Warming*, 'Interpersonal Communication' was found to be a little higher than 'New Media' sources. The results showed that students have a dwindling habit of reading printed material like newspapers and magazines while visual media like the television catapulted their imagination to a higher degree. Even amongst the printed sources, entertainment and sports were their primary interest. Apparently, the infusion of social networking sites like *Facebook*, *WhatsApp* and *Twitter* that provide instant gratification propelled the fall of the printed word. Entertainment, and not news, was the priority while viewing television as well.

Mass media took the pole position in terms of spreading awareness on climate change while interpersonal communication and new media trailed the traditional platform on the same yardstick.

Regarding the frequency of access to climate change information, it was revealed that TV was cited as the most frequent information source by the post-graduate students in Agartala. Next in line were the newspapers followed by the Internet. This could be traced to the availability and penetration of mass media in India, which is growing at a rapid pace. In a country like India, where literacy is still on the lower side and the printed word is still an elite domain, TV runs amok and determines media visibility. Since television has always been associated with glamour, people seem to get attracted to the medium more than any other similar platforms. With TV channels now becoming a pan-Indian phenomenon and the idiot box having entered the people's psyche, both the educated and uneducated sections of the society are getting increasingly attached to it. Thus its ability to influence the collective consciousness of the general Indian populace is proving to be much more than any other medium. Conversely, the new media, and more particularly the internet, is still an urban phenomenon and have hardly penetrated the rural bastions in the hinterland of the country. Although vernacular newspapers act as a strong neutralizer, the reading habits are on the decline and thus the printed press plays a secondary role in spreading environmental awareness.

When queried about whether or not mass media exaggerate the problem of *Climate Change*, 22.53 percent of the respondents agreed to its likely possibility while 37.60 percent somewhat agreed with the predicament. Conversely, 28.73 percent of the respondents somewhat declined with the conjecture while 9.43 percent summarily rejected the proposition. Interestingly, a significant 33.46 percent expressed an inability to opine on the subject as they declared their issue-based ignorance. In a country like India, informed opinion on the issue of media activism is a far cry. The post-graduate students didn't seem to be an exception on the given regard either. There is a huge difference in opinion and unanimity didn't seem possible on the subject. The fact that a large number of people expressed their inability to come to a conclusive opinion is a mere rejoinder to the fact that media literacy is abysmally low, even amongst the educated section. Also, it points to the fact that the media is more concerned about the 'breaking-news' phenomenon rather than issue-specific activism, demanded by the fundamental tenets of honest journalism. Additionally, a staggering 70 percent of the respondents didn't have any strong opinion and thus it categorically displays a very low level of awareness about the functioning of the media. There is a strong possibility that the popular media is trivializing climate change information as well and the general populace is being taken for a wild ride, thus creating a alarming information gap. The free press in India might be abusing its control over public opinion. Cross-media ownership, which has become one of the most significant ethical issues in India, has given rise to interest-seeking thus giving birth to biased-environmental and other issue-specific reportage. This was also alleged by *Billett* (2010). As a result, the consumers of the media are essentially being misguided by a one-dimensional approach towards information, thus creating a skewed perspective towards any issue with *Climate Change* being no exception. Relevant researches have revealed that there is no climate change skepticism in Indian mass

media unlike the Western Press although the issue of climate change alarmism is existent in India due to ownership patterns, where emission cut is being considered to be a kick in the stomach.

The post-graduate students of Agartala strongly trust scientific publications when it comes to collecting reliable information on climate change issues. Next on the radar is the mass media. However, it was found that they strongly distrust teachers, family and friends in terms of climate information. It is apparent from the findings that government reports and business reports are not strongly trusted by the concerned sample. Trusted sources of information have the ability to change environmental perception and initiating mitigation efforts on climate change. In the Western context however, information received from the mass media is seldom perceived to be reliable. Thus it doesn't change perception on the environment and motivate receivers to initiate mitigation efforts. However, in India, mass media is given some amount of credibility in terms of providing trusted information on the environment although interpersonal communication is hardly impactful, which is a strongly trusted source in the Western context. Under the given circumstances, it could be inferred that Indians bank on non-personal outlets like the mass media whereas the Western citizen attaches more importance on personal touch. According to the *Diffusion of Innovation* experiment (*Rogers*, 1962); two-way communication doesn't happen for mass media. Thus interpersonal communication or two-step flow of communication induces change in behaviour. However, in the Indian context, this conjecture doesn't fit well and thus it is not very clear if there is a change in behaviour. Future researchers could as well dwell on this aspect.

When asked on the accuracy, clarity of explanation of scientific and technological information on *Climate Change* and the viewing habits of the respondents in terms of their channel preference; 70.47 percent preferred private cable TV channels like *NDTV*, *Aaj Tak* and the likes to gain information on climate change. However, only 21.92 percent reported that they would prefer *Doordarshan*. Interestingly, only 7.61 percent reported that they would prefer neither. Similarly, it was found that the students would prefer reading national newspapers than the local dailies to access accurate information on climate change.

The findings clearly suggest that there is an acute shortage of trust factor for the government-owned news outlets while people seem to significantly bank on the private news channels to gather information on climate change. As it has been found that the government often manipulates data to fit its needs, post-graduate students seem to have lost their interest for *Doordarshan* and other such outlets under the umbrella organization of *Prasar Bharati*. Historically, the government-owned mass media have indulged in patronizing the ruling party, sometimes at the cost of objectivity and impartiality, as could be seen from the period between 1975 and 1977. Continuous breaches of journalistic ethics have basically robbed the outlets of any semblance of credibility that might have been left. With the infusion of private funds into the business of television news, things started to drift and thankfully for the better. *Pronoy Roy* and his brand of journalism in the early part of the last decade of the past millennium changed the course of media discourse forever in India. Now, it was impartiality that was ruling the roost. People could afford to believe and trust information doled out by the private news channels, which had no stakes in the government.

Thus, private television mushroomed in India like never before and there was a significant variation in trend from one network to the other. This was well in contravention to the Western markets where there was an arithmetic increase in media sources and not a geometric one, as had been experienced in India.

Also, it could be inferred that the respondents found the national dailies to be far more trustworthy than the local newspapers subject to recurrent trivializations. Often, it has been seen that no editorial responsibility is attached to news reports published by the local dailies subject to a significant shortage of accountability factor whereas the national newspapers publish news only after a significant amount of gate-keeping.

When asked, if nothing is done to combat climate change in future, how much do you think it will hurt you personally?'', about 38.20 percent reported that it will hurt them *'a great deal'*; as many as 43.84 percent reported that it will hurt them *' A lot'*. A small minority of 10.96 reported it will hurt them in *'a moderate amount'*. Surprisingly about 1.67 percent believed that it would not hurt them '*at all'* and 5.33 percent could not give any preference.

Similarly when asked how much would climate change be serious for the world, a large majority of nearly 80.97 percent reported it will be '*very serious'*. Hence, the post - graduate students in Agartala have a perception that climate change will lead to sea level rise and consequent environmental refugee problems may arise. Another notable perception held by them was that climate change would lead to increase frequency of natural disasters like floods and cyclones. This perception might be having a proximity effect, as because Bangladesh is a neighbouring country from where there were two hoards of immigration problem in the history of Tripura, one during the independence of India in 1947 and the other during Bangladesh liberation in 1971. Hence, they feel that if there is sea level rise in the neighbouring country due to climate change, there will be another immigration problem in Tripura as it shares cultural, geographic and linguistic proximity with Bangladesh.

There were also more than fifty percent students who believed that climate change will cause ill health. More than fifty percent students also subscribed to the view that there will be unpredictable monsoon and deficit rainfall in the wake of climate change. But there were comparatively few subscribers to the view that there will be rise in vector borne diseases like malaria and typhoid.

On the other hand, around 87.68 *percent* of the students *agree* to the statement that "reduction in green house gases and carbon dioxide is one of the ways to mitigate climate change". Also about 75.19 percent students have expressed their agreement with the statement that "making changes in people's lifestyle could help reduce climate change". Regarding 'personal efficacy' of the students for mitigation efforts aimed at climate change, about 37.14 percent *strongly agree* and 41.86 percent *agree* to the statement that "I feel I could do something to solve the problem of climate change like switching off from fossil fuels use to renewable energy like solar and wind energy that can really help in solving the problem of climate change."

When asked to respond to the statement "I do not know what could be done to help fight climate change", about 35.01 percent *disagreed* and about 10.81 percent *strongly*

disagreed, whereas, as many as 22.83 percent *neither agreed nor disagreed* to the statement. However, a small minority of 9.89 percent students *strongly agreed* and about 21.46 percent *agreed* to the statement that "I do not know what could be done to help fight climate change".

About 32.88 percent *strongly agreed*, another 30.75 percent *agreed* to the statement that "*It is not a single person's duty but it is government's responsibility to prevent climate change"*. However, about 12.79 percent *disagreed* and 7.46 percent *strongly disagreed* to this statement. Thus, combined as many as 63.63 percent can be said to have *agreed to* this statement while, a minority of 20.25 percent can be said to have *disagreed* to this proposition. So we can infer from the above that more than 63 percent students still hold *"others"* to be responsible to stop climate change.

Similarly, around 50.84 percent students were in favour of the proposition that "*the actions of a single person like me would not make any difference in stopping climate change"*. Whereas, about 30.59 percent of students still believed that their actions could not make a difference in combating climate change.

About 18.57 percent students strongly agreed, 29.98 percent agreed to the policy that "India should comply with Kyoto protocol". Whereas, 8.52 percent strongly disagreed, 18.42 percent disagreed to the said statement. But there were also another 24.51 percent who would neither agree, nor disagree. Hence combined 48.73 percent agree while, 26.94 percent disagree to the policy of India complying with Kyoto Protocol. 9.59percent students strongly agreed, 8.98 percent agreed to the policy that "India should immediately take steps to reduce its emissions of carbon dioxide without waiting for other countries". Whereas, 27.85 percent strongly disagreed, 41.10 percent disagreed to the said statement. But there were also another 12.48 percent who would neither agree, nor disagree. Hence combined we find that a small portion of the students i.e., 18.57 percent agree while, a large proportion of the students 68.95percent disagree to the policy of India taking immediate steps of reducing its carbon dioxide emissions.17.20percent students *strongly agreed*, 33.18 percent *agreed* to the policy that "India should reduce its emissions of carbon dioxide only if the rich countries do it first". Whereas, 8.07 percent strongly disagreed, 23.29 percent *disagreed* to the said statement. But there were also another 18.26 percent who would *neither agree, nor disagree*. Hence, combined we find that 50 percent portion of the students i.e., about 50.38 percent *agree*, while a combined 41.55 percent of the respondents tend to *disagree* to the policy of India taking steps of reducing its carbon dioxide emissions only if rich countries do it first. 22.68 percent students *strongly agreed*, 30.44 percent *agreed* to the policy that "India should start reducing its emissions of carbon dioxide only when all countries in the world have started". Whereas, 8.83 percent *strongly disagreed*, 21.61 percent *disagreed* to the said statement. But there were also another 16.44 percent who would *neither agree, nor disagree*. Hence, combined we find that about 53.12 percent of the students tend to *agree* with the proposition, while a combined 30.44 percent of the respondents tend to *disagree* with the policy of India reducing its carbon dioxide emissions only when all countries in the world have started. 14.76 percent students *strongly agreed*, 26.18 percent *agreed* to the policy that "India should not put a curb to reducing its emissions under any circumstances as it would retard the path of

economic development of the country". Whereas, 8.37 percent *strongly disagreed*, 19.33 percent *disagreed* to the said statement. A substantial 31.35 percent would *neither agree, nor disagree* to it. Hence, combined we find that 40.94 percent of the students tend to *agree* with the proposition, while a combined 27.7 percent of the respondents tend to *disagree* with the statement above mentioned. Hence, that the post graduate students of Agartala are of the opinion that India should take immediate steps to reduce its emissions of carbon dioxide without waiting for other countries and set an example.

When asked, new technologies would be invented by the scientists who would solve the problem of climate change, without people having to make any changes in life". 18.57 percent strongly agreed, 29.98 percent agreed, 24.51 percent were undecided, 18.42 percent disagreed to the statement and 8.52 percent strongly disagreed. Thus we can summarize that around 27 percent of the students believed people should be conscious to make changes in their personal life if they were to fight climate change irrespective of the success of new technologies. On the other hand, 48.55 percent were under the wrong impression of the success of new technologies for combating climate change. These groups of students had little egalitarian world view. They had no concern for Climate Change and were of the opinion that we can exploit the environment as much as we can; science is there to come for their rescue.

The study reveals that about as many as 83.26 percent respondents feel that replacing conventional *light bulbs with low consumption light bulbs* can help reduce climate change. About 14.11 percent *do not subscribe to this view* while 2.59 percent *do not know* anything in this regard. Around 64.23 percent students expressed solidarity with the issue of acquiring energy-efficient domestic appliances, even if it costs more. As many as 30.29 percent students *do not feel in the affirmative* and 5.48 percent *do not know* anything in this regard. Similarly, about 65.60 percent the respondents felt that they would definitely take environmental aspects into account while acquiring high budgeted item like a car, house etc. 29.68 percent *do not subscribe* to this while 4.72 percent *do not know* anything in this regard. Around 71.23 percent the respondents reported that they would *definitely reduce car journeys and use public transport and bicycles or adopt car pool so as to help cut emissions of carbon dioxide*. 25.42 percent *do not subscribe* to this, while 3.35 percent *do not know* anything in this regard. It was found that around 87.98 percent the respondents reported that they would *definitely plant trees in their house so as to capture carbon dioxide and help aforestation.* 8.07 percent *do not subscribe* to this, while 3.96 percent *do not know* anything in this regard. Also about 80.97 percent the respondents reported that they would *definitely reuse/recycle some materials like glass, paper, bags, which can help prevent environmental waste accumulation.* 15.07 percent of the postgraduate students *do not subscribe* to this view, while 3.96 percent *do not know* anything in this regard. Around 84.02 percent the respondents reported that they would *definitely try reducing energy use in the home and at classrooms by switching off electrical appliances like lights, fans, etc, which are not in use.* About 12.02 percent *do not subscribe* to this measure, while a small portion of 3.96 percent *do not know* anything in this regard.

Up to 80.67 percent the respondents reported that they would *definitely be willing to pay more for green products and services*

or technology if it is meant for reducing climate change. About 15.22 percent *do not subscribe* to this measure, while a small minority of 4.11 percent reported that they *do not know* anything in this regard.

When asked, "Do you feel that the mass media in our country is expressing due concerns about the impact of climate change in India"; As many as 24.05 percent felt that the mass media of the country is *very concerned*. About 45.05 percent felt that it is *fairly concerned*. Some 18.42 percent felt that the mass media was *least concerned*. A small minority of 5.48 percent students felt *not at all concerned*. Another 7 percent reported that they *do not know* anything in this regard.

When asked, "How large an influence do you think the mass media have on sensitizing the youths of our country for creating public opinion and taking action in combating climate change?"; about 18.87 percent felt it was *very large*, as many as 44.29 percent consider it to be *large*, another 21.92 consider it to be *small*, while 5.33 percent felt it to be rather *very small*. A minority of 9.59 percent reported that they *do not know* anything in this regard.

When asked, "The mass media is often accused as too alarmist about climate change which is not happening, there is just more reporting of it in the media these days," nearly 51 percent respondents felt that the mass media in India is alarmist in covering climate change issues. However, about 33.18 percent students *neither agreed nor disagreed.*

According to 65.45 percent respondents the *mass media* like Radio and TV etc., is the best source for spreading information on climate change issues in a developing country like India. While 26.64 percent respondents felt that *new media* like the Internet was the best for spreading information on climate change issues. Only 4.11 percent consider Interpersonal communication to be the better choice. A small minority of 1.98 percent students felt traditional media to be the best choice in this regard. The study also reveals that the mass media in India has been able to explain the causes, consequences and different solutions of it in *a moderate amount* to the post-graduate students in Agartala

When asked, "what have you done in the past six months to ventilate your concerns about climate change in the mass media that you are subscribing?'' about 32.88 percent reported that they have *done nothing*. As many as 27.09 percent students reported that they have *posted comments/started discussion forums on climate change issues in the social media like Facebook, Twitter etc*. As small as 17.05 percent students reported to have *contributed articles on the issue in the newspapers/magazines*. Only 8.98 percent reported to have *written letters to the editor* of the newspapers they subscribe and 14 percent reported to have *contributed radio/TV scripts* to be broadcast.

When asked, "what measures would you like to suggest to the mass media organizations so as to create extensive public awareness among the youth of Tripura regarding Climate Change?'' as many as 49.32 percent suggested that there should *be sensitization workshops for the journalists and editors*. Another 19.48 percent suggested for establishment of *awards for best reports/stories* on climate change. About 13.70 percent suggested organizing *training programmes for reporters/correspondents* on climate change. A minority of 9.28 percent suggested that the broadcast media should have *specific time slots devoted* to climate change

programmes. A miniscule of 5.63 percent suggested that the newspapers should have *specific pages/articles devoted* to climate change.

5. Conclusion:

From the study it was found that the students belonging to different disciplines in Tripura University, Agartala were not aware of most of the nitty-gritty on issues of climate change, and therefore, they were not able to answer all the questions posed by the researcher correctly. From this outcome we can surmise the 'would- be' picture of the whole of the state. Even students from the capital city of Agartala did not fare well in their knowledge on issues of climate change; the case would obviously be grim when it comes to rural areas of the state. Students in the state of Tripura may be inadequately prepared for a world that will change dramatically owing to climate change. The policy makers have a long way to go if they want to combat global climate change problem seriously. Much more has to be done to educate the student community on the issues of climate change, mitigation and adaptation. Occasional awareness creation seminars are far from adequate.

An age, sex and class difference was marked with respect to awareness on issues of climate change among the students understudy. The post-graduate level students ought to be much more aware of the climate change issues. Similarly, the male students were more aware on issues around climate change as compared to their female counterparts in both the postgraduate and doctoral level of classes.

It can be further argued that educators in schools and colleges are in a position to empower their students with the capability to survive in a *soon to be precarious world*. Hence, it would be pertinent to propose that schools and colleges in the state of Tripura should do more to fill this gap by mainstreaming climate change and global warming issues into curriculum with a view to providing students with the skills to pursue adaptive strategies in order to cope with the problems that climate change when they come to pursue post graduate studies.

Mass media also has to be proactive in diffusion of climate change communication. The agenda setting power of the mass media and especially of the *newspapers and magazine* or printed word still holds a respectable place of position in the hierarchy of mass media habits among the student community in this age of internet and video on-demand. Newspapers being less costly medium than television should be roped in advocacy by the government and the policy makers to spread awareness on global climate change. Besides putting straight hard news on global climate change, features, stories and other forms of soft news in the newspapers and magazines can drive the message on *do's and don'ts* regarding global climate change more effectively than any other medium because the written word carries a lot of credit among the readers. Newspapers can be read and re-read, while TV or radio messages are transitory in nature and if the listener did not switch on the equipment when the message was being broadcast, the purpose would be nullified. In contrast newspapers and magazines have a longer duration of message retention period and it does not depend up on time factor unlike that of broadcast media. New media like *Facebook* and Twitter can be very potential in this regard.

This study is not conclusive as because of the constraints of time and resources, larger samples could not be taken and students

from colleges and schools in the city of Agartala were deliberately not considered. Clearly from such a small sample, all conclusions are necessarily tentative and open to dispute. The study could be extended in future to encompass larger samples from several institutions and supported by in depth discussions like focus group discussions and content analysis of the mass media reports would have revealed a more nuanced picture and that would result in better quality understanding of the problem. This would be left for future researchers desirous of working on these lines.

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About the Author:

Deepak Upadhyaya is an Assistant Professor in the Department of Journalism and Mass Communication, Tripura University, Agartala-799022.Since the inception of the department in 2009; he has been rendering his services in spreading media education in the tiny state of Tripura. Presently he is engaged in doctoral research on climate change and perception of students from the Department of Mass Communication, Assam University, under the supervision of Prof. K.V.Nagaraj.