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Is Global Warming Round the Corner in India? A Literature Survey of What Media Can Do To Mitigate Global Warming

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ABSTRACT

Until recently, people in India advocated 'wait and watch' and argued that no action should be taken against global warming until we know exactly what effects it will have on the environment. However, scientists have proven that major atmospheric changes have already taken place due to global warming and that these changes will permanently damage the environment drastically in the near future. We have been experiencing more and more of natural disasters like cyclones, water stress, smog and extreme summers. One fact is for sure; the longer we delay action against global warming, the more difficult it will become to take effective steps to counter the menace and mitigate the problem. In order to prevent further global warming, we have to immediately reduce carbon dioxide emissions at individual levels. This paper is a commentary on what mass media can do in this regard.

KEYWORDS: Global Warming, Greenhouse gases, Climate Change, and Mass Media.

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INTRODUCTION

SwarupDebbarma, a small boy, about five and half years old, uttered something which made me curious. He is a student of KG 2 in the Holy Cross School, Agartala. He lives in my neighbourhood with his parents who are well known to me. As I was passing by, I heard him say, "Mom, it is 14th of November now, and when will we wear winter clothes this year? Last year, you had gifted me a new sweater on this date, when will I be able use it this year? Mom, will it be of no use and won't there be winter coming? The mother was left with no answer".

There is a lot of truth in the innocent query of the child. This is the story of our planet earth which is getting hotter day by day. With each and every passing day, the weather patterns and climatic conditions of our country are changing substantially. Winters are short now and summers becoming unbearable. This is the state of affairs in India and elsewhere. Global climate change is round the corner. It is human- induced phenomenon to a great extent. Notwithstanding this, the general public in India is unaware of what actually causes *anthropogenic* (human-caused) climate change and irreversible global warming. It has taken decades for climate change to enter public discourse in even the most superficial manner in developed countries. Periodic surveys, researches and assessments reports by UN agencies have proven that the global warming-induced changes in world's climate are increasing day by day and it has assumed catastrophic proportions. India is more vulnerable than many countries; in fact, India is one of the world's vulnerable countries to the impact of climate change [1,2,3,4,6].

Our planet earth is naturally exposed to greenhouse effect which is essential for creating a climate favourable to the sustenance of most life forms. Gases that cause greenhouse effect are called greenhouse gases (GHG). These gases either occur naturally or are produced on earth primarily due to human activities, particularly by the consumption of fossil fuel. The effect of warming and insulation of the earth, known as greenhouse effect, is caused due to heat trapped by the greenhouse gases. Scientists consider that augmentation in the concentration of greenhouse gases in the atmosphere has been on a steady incline since the industrial revolutions in the late eighteenth century. The natural greenhouse gas effect, in fact, is a process of thermal blanketing of the earth which maintains its temperature around 33 degrees Celsius assisting the sustenance of life. Without greenhouse effect, the climate of the earth would become too cold for most of life forms to sustain and survive[7].

GLOBAL WARMING IS CATACLYSMIC

The advent of the Industrial Revolution boosted up the extensive use of fossil fuels like coal, oil and natural gas in the world, especially in Europe. The said process released a lot of heat absorbing gases into the atmosphere. Industrial and commercial activities created massive pollution and the pollutants accumulated over the centuries. According to the modernization paradigms advocated by scholars like Daniel Lerner[8], Wilbur Schramm[9] and others, industrially backward nations emulated the path ensued by the industrialized nations and consequently amplified the natural process of greenhouse emission to large quantities. Historically, many nations in Asia, Africa and Latin America, which became independent, after the Second World War, subsequently moved towards adopting the western style of industrialized development. Large and small scale industries were set up as part of the development programme. But it went on adversely affecting the environment[10]. Development projects that were recommended by the experts were obvious meant to taping natural resources that lead unintended release of carbon dioxide in huge quantity and individual carbon foot prints plummeted double[11]. The pressure of ever increasing of population throughout the world, especially in developing economies led to the continuing process of dwindling forest areas to make room for agriculture or human settlements. Massive deforestation and desertification acted as a deterrent to the ecological carbon sink mechanism. More industrial and agricultural processes increased prolonged remaining of greenhouse gases in the atmosphere.

In fact, greenhouse gases like carbon dioxide, water vapour, methane, nitrous oxide, chlorofluorocarbons, hydro chlorofluorocarbons and trifluoromethyl sulphur penta-fluoride either occur naturally or are produced on earth due to burning of fossil fuels and biomass[12]. These gases are heat-absorbing gases and accumulate in high concentrations in the upper atmosphere, extending up to hundred kilometres above the earth's surface, and act as glass panels of a greenhouse. These gases allow much of the short-wave solar radiations to reach the earth's surface but stop much of the long-wave infrared rays from escaping as heat. The greenhouse gases absorb the infrared radiations and re-radiate most of them back to the earth. Thus the temperature of the atmosphere gradually increases which in turn, cause an unnatural heating effect. Global warming is a real big threat for all of us in the present times[13].

In 2005, representatives from more than ninety countries again met in the Canadian city of Montreal to discuss ways and means on cutting down the use of ozone - depleting chemicals and greenhouse gasses so as to decrease human induced global warming. The Montreal Protocol was drafted and it sought co-operation from member countries to reduce dependence on the consumption of fossil fuels so that drastic emission of carbon dioxide could be arrested globally. According to the Montreal Convention, the level of carbon dioxide in the atmosphere was reported to be highest in the last thousand years. A number of countries adopted the Montreal Protocol and pledged actions to

control the production of ozone-depleting substances like CFCs. The Montreal Protocol expressed concern over the much-discussed ozone hole which was created subject to the thinning of the ozone layer in the stratosphere. The ozone layer round the earth becomes thin when chlorofluorocarbons come in contact with ultraviolet rays and ozone molecules get oxidized to oxygen, creating the so-called ozone hole over the Southern Hemisphere. Unfortunately, the Montreal Conference did not succeed as the two biggest emitters of the world -the USA and Australia refused to cut down their greenhouse gas emissions. It is an irony that international agencies studying climate change have been consistently projecting that the average global temperature will increase by 1.4 degrees Celsius to 5.8 degrees Celsius over the period 1990 to 2100 due to unabated greenhouse gas released by human and industrial activities[14]. The sources of greenhouse gases are deeply embedded in industrialized and industrializing countries economies due to their carbon intensive lifestyle. The more a country is a developed country; the more it is releasing greenhouse gases and ozone depleting substances into the air due to its industrial activities. Industrialized countries of the Global North like the United States, European Union, Japan and many others have been emitting these gases for many years since Industrial Revolution. However, developing countries of the Global South like India, China, Brazil and many others are also starting to emit these greenhouse gases as their industrial activity and factories are coming up in large numbers. Not only these economies are home to large number of population on earth whose carbon footprints are increasing every day, but also these countries have a substantial proportion of bourgeoning middle class whose lifestyle is in no way inferior to that of the citizens from the industrialized nations.

In the meanwhile, the Intergovernmental Panel on Climate Change (IPCC) was created to give scientific advice on climate change and mitigation measures to the world leaders. Since then it has been at the vanguard of spreading climate change awareness and assessment through the publication of its series of assessment reports. According to the IPCC reports, there is a great deal of evidence indicating that certain human activities are causing the warming of the earth's atmosphere. The report says that unless steps are taken to prevent further global warming, the average surface temperature on earth will rise by about 1 degree Celsius to 3 degrees Celsius by the year 2100[15].
Despite its overriding consequences, climate change is also the least understood problem amongst the masses of India. If left unchecked, climate change is expected to usher in disaster on many human and natural systems - including increased floods, droughts and extreme weather events, lesser productivity from large areas of existing farmland, migration due to climatic changes and conflict over dwindling resources.

Armed with decades of research, available literature speaks volumes about global warming and consequent uncountable devastations, if not combated well ahead of time. Global warming

induced natural disasters like cyclones, storms, hurricanes, floods and droughts are getting intensified. It may also cause cloud bursts, avalanches, landslides, mud-flows and earthquakes. Tropical diseases such as yellow fever, malaria, filarial fever and dengue may spread to wider areas. Many animal and plant species may become extinct because of warmer temperatures disrupting their habitats or breading pattern. The rising sea level could cause inundation of land in the coastal areas leading to a huge loss of lives and property worth millions globally. Massive flooding in the coastal areas may cause grave socio-economic damages to vulnerable countries like India, Bangladesh, Japan, Australia and many low-lying island nations in the world. It may also cause large scale displacement of people which may further aggravate problems of environmental refugees. Due to drastic the sea-level rise many a low-lying island-countries like Sri Lanka, Maldives, Mauritius and many a coastal cities around the globe are already facing severe problems causing a massive loss of life and properly of tens of millions in these nations. Not very far, the Andaman and Nicobar Islands and Lakshadweep Islands in the Indian Ocean are not immune to sea level rise. In this context, fears articulated by scholars from the George Mason University like Leiserowitz and Thaker[16] are not without any iota of worry for our country even as the Indian Network for Climate Change Assessment (INCCA) has expressed its grave concern for the issue of climate change induced disease burden years ago. Subject to sea level rise, there is a probability of a large number of environmental refugees displaced from the low-lying coastal regions of the country. People dependent on coastal fishery and agriculture are likely to be adversely affected in the event of intrusion of saline water into ground water. Since the beginning of the twenty- first century, major natural disasters like the Orissa Cyclone, Andhra Pradesh Cyclone, Indian Ocean Tsunami and flash floods in Uttarkhand and similar incidents have created havoc time and again in the country. Likewise, the recent Kerala floods of 2018 were a national disaster of immense magnitude. Climatologists are of the opinion that the increased occurrence of extreme events due to climate change was only imminent[17]. Cyclones of severe intensities will affect the developing countries like India, Bangladesh. The long coastlines of India would be a matter of concern in the event of cyclones that may cause huge loss of lives property of thousands of people residing in the costal districts[18]. As per media reports, for instance, the cyclone *Phailin*, was estimated to have caused more than $4.15 billion of damage to the agriculture and power sectors in India. The total estimated damage to the effected districts in Odisha, West Bengal and Andhra Pradesh, caused by the recent cyclone *Titli*, is yet to be assessed correctly. The human suffering and loss of property that accompany such floods and other extreme draught conditions induced by global climate change in a poor country like India will be beyond the tackling capacity of the country[19]. Reduced GDP, failure of monsoon and escalating food price inflation will lead poor income economies to the vicious cycle

of poverty and push these countries to a quagmire of debt-trap and spiralling inflation. On the contrary, advanced countries like the US, UK and like are also beginning to face climate change induced typhoons that lead may to death and destruction. Climate knows no boundaries and the socio-economic loss will be equally felt by all countries, irrespective of the volume of carbon dioxide emitted by them. Compensation, reconstruction and insurance coverage to be provided by the government will drain the treasury for development works in these countries.

In a comprehensive study of the impact of climate change on agricultural sector alone in India, Parikh and Parikh[20] opined that the GDP and welfare of people of India will be adversely affected in the event of imminent climate change in India. This is obvious considering that the Inter-Governmental Panel on Climate Change [21] has projected a temperature rise of 2.5 degree Celsius to 4.9 degree Celsius in the near future.Parikh and Parikh[22] further predicted that there may be an average reduction of 32 per cent to 40 per cent in rice yield and 41 per cent to 52 per cent decrease in wheat production. Consequently, the GDP of India would dive by 1.8 per cent to 3.4 per cent.The authors[23] are furthermore of the opinion that for a developing country like India, these are very huge changes which may cause significant human misery as the country is ill prepared to tackle climate change induced problems.

Agricultural practices may also get hampered due to the cascading effects of global warming. Irony is that about half of India's 1.30 billion people are engaged in agriculture for their livelihood and are dependent on summer monsoon rains. Meteorological scientists and several researchers in India believe that climate change is a contributory factor to the changing weather patents like late arrival of monsoon and its lesser intensity. Growing seasons for food crops and vegetables in India and other tropical countries have become shorter and food price inflation is creating havoc in India[24]. Furthermore, growing circumstances for semi- aquatic crops like paddy which is a staple food crop in India may become difficult due to water stress, causing food shortages in many areas of the country[25.] Climate change may also lead to crop failure in a number of ways pushing the world towards long spell of famines and poverty as most of the corn and pulses are harvested in monsoon season. Global warming may also cause failure of the Asian monsoon leading to serious damage to various ecosystems like mangrove-swamps, coral reefs and coastal lagoons. Also problems of ocean acidification cannot be ruled out in the wake of massive global warming.

If a one-meter sea-level rise were to take place today, it would displace about 7 million people in India [26, 27]. The literature further reveals that 35 per cent of the land mass in Bangladesh may be submerged by a one-meter rise in sea-level. In the event of such a natural catastrophe, millions of people in Bangladesh are likely to be displaced[28] and many of them could spill over to India via bordering states, especially through Tripura, as it shares geographical, linguistic and

cultural proximity with Bangladesh. Historically, Tripura has been home to a host of people from the neighbouring country. This happened twice; first in the aftermath of India's Independence in 1947, and on the second occasion, when Bangladesh was liberated in 1971s.

ROLE OF MASS MEDIA IN A WARMING WORLD

It is also pertinent to mention that media matters a lot in any discussion of climate change communication. The reduction of individual carbon footprint and creation of a congenial international climate change policy regime largely depends upon public attitudes, and public attitudes in turn, can be influenced by the mass media in several ways[29]. Climate change communication literature reveals that media can influence both public opinion and policy outcomes at all levels; whether it be in national or international spheres[30]. The mass 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. The mass media has documented the rising significance of environmental issues over the past few decades. A great deal of what most people hear about issues such as the greenhouse effect, global warming, ozone depletion, water and air pollution, and environmental threats like global climate change is likely to come from the annals of mass media[31]. Another significant study intended at understanding media's role in the public perception of climate change was conducted by Fortner and his colleagues[32]. They have also assessed individuals' keenness to take action to reduce global warming. Their results showed a fair degree of willingness among the public to take actions such as supporting environmental education programmes and installing energy efficient light bulbs. Contrarily, willingness to take action to support increases in gasoline (petrol) prices and use of public transportation was less[33]. In another study Pavone[34] reported 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 on 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 NASA scientist created a media storm by his testimony of 99 per cent surety of global warming before the US Senate in 1988 [35,36].

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 'sceptics', 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[37], 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 the US history, is a case in point which propelled the frequency of climate change reporting to a new high and a new norm.

In the above context, Boykoff and Rajan[38] are of the opinion that a few key factors like journalistic norms, influence of policy makers and scientists, and choices of the public that shape or mediate the creation of media reports on climate change. They have argued that there are two categories of influencing elements which work in favour of media coverage. The first is the 'macro-relations', like economic considerations, institutional channels, and legal constraints and the second are 'micro-processes' which include day to journalistic considerations. With reference to economic considerations, the weak media outlets working in developing countries face considerable financial constraints which impact media reporting on climate change and often they ignore climate change at the cost of political and crime beat. Climate change news has to continuously compete for space and time slots. Lack of financial resources in developing countries deters coverage of complex issues like climate change. Lack of funds in these countries may also impede in training the correspondents who would like specialize in investigative environmental reporting. So the media outlets of the developing countries scarcely cover environmental beat until and unless the story qualifies to be placed into a disaster frame. Climate change issues have a very short term salience because of unwillingness by the reporters to cover the issue as the establishment is often obsessed with crime and politics reportage which sells well every day.

On the other hand, the media houses in the developing countries are incalculably dependent on the advertisers for their survival and many of the media establishments are in the hands of the capitalists for which their editorial policy does not have press freedom, so they hardly speak against their advertisers like automobile manufacturers, fast food multinationals or oil companies for action against climate change. Another macro-process that often works in the pursuit to attract ad revenue by the media outlets, they have to run advertisements of environment polluting companies and have to air those programmes that suit the advertisers' preference with lesser slots for non- revenue

earning environmental beat like climate change. Thus poor financial resources and a colonial history of weak media institutions in the developing country like India tend to prefer other issues such as crime at the cost of environment; consequently such dynamics hinder media coverage of climate change.

India was a closed economy until 1990s, and the government run public service broadcaster Doordarshan was the only option of TV viewing option available to the Indians. But with opening up of the economy post 1990s, private cable television operators invaded the country from the skies and soon television viewing options increased manifold. As the penetration of cable and satellite television channels increased in India, television became a medium of communication with powerful impact upon the masses, particularly young adults. Many studies conducted in behavioural sciences scientifically proved that television has an impact on its viewers especially on young adults. The emergence of music channels in the line of MTV channel has created significant changes in the attitudes and behaviour of young adults in the country. Page and Crawely[39] refers to a Neilsen Report that reported that Indian college students watch television programmes on an average 3.41 hours a day and 24.3 hours per week. Time spent by the Indian students in television consumption is twice the amount of time the average full time student spends in the class room. A study conducted by among middle class Indian students reported that boys articulated a preference for news, sports and quiz programmes on the TV, while girls favoured mythological serials and dramas.

Researchers like Pavone[40] mentions that this phenomenon has been at the root of perennial dramatization of climate change issues, especially in the US, by presenting a debate over climate change science which has been established as fact by the scientists. McComas and Shanahan[41] also highlight that media reporting is as important an element in shaping the climate change debate as exogenous factors such as natural disasters.

Mediated messages about climate change are pervasive. Media's proactive role can drive specific policy action for climate change adaptation and mitigation. If the national media is vigorously aligned with climate change, it can push for more timely policy agenda for climate change adaptation and mitigation measures. Literature has revealed that increased coverage of climate change over the past decades has rendered the issue more salient for the public across the world. It is also worthy to mention that media has a significant role in bringing international aid in combating climate change. For instance, Mozambique floods in the year 2000 can be referred to as an example narrate the power of the television visuals. Pavone[42] mentions that as soon as the global media gained access to the area and covered the destruction with strong visuals of the cyclone which rendered thousands of people homeless, generous flow of aid started pouring in to the area. The broadcast media, especially television images helped mobilize foreign aid, medicines, rescuers and

other emergency resources in an unprecedented manner to Mozambique. However, Pavone[43] laments that due to lack of media coverage, in the case of Orissa cyclone in the year 1999; the humanitarian aid mobilized was several times lesser despite the greater severity of the cyclone in Indian Ocean. This instance implies that media advocacy can influence a great deal in garnering national and international support for climate change governance.

Television is both a news media and entertainment media available to people in developing country like India. TV can perform a significant role of a powerful catalyst in the crusade against climate change. It can set an agenda among the masses in the society. Equally commendable could be the role of film media in this regard. Leiserowitz[44] mentions that the issues of climate change made its impressive entrance into the public sphere with the release of "*The Day After Tomorrow",* a 2004 blockbuster Hollywood movie. In this context, Leiserowitz[45] further reports that the viewers of the said 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 in US; in contrast 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 politicians debated the scientific accuracy and political implications of the movie on public perception of the science of global climate change.

Scholars like Reusswig[46] and Lowe [47] conducted similar studies separately in the UK and found that viewers of the film "*The Day After Tomorrow"* reportedincreased public concern about global climate change. Several studies [48,49,50,51] indicated that mass media platforms like cinema where climate change issues are dealt can go a long way in creating awareness among the public on issues like climate change. In this context mention may be made of few movies like "*The Day After Tomorrow", "An Inconvenient Truth* "and "*Live Earth".* Commenting on the significant role of mass media as a launch-pad for scientific issues like global climate change among the public, Reusswig[52] opines that:

It is doubtful that the creators of the United Nations Framework Convention on Climate Change (UNFCC) 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 not only can inform the public but also stimulate public opinion in favour of policy legislations aimed at combating climate change. The media can shape the perception of the public about climate change issues and compel individuals to action and demand policy changes from their government to address the problem. In tune with the above, Bordet al.[53, 54] found that increased understanding of the climate change issue motives people towards mitigation

action. Likewise Krosnick et al.[55] argue that if the public has access to scientific and accurate knowledge about climate change, it may bring about increased certainty about the phenomenon which in turn increases assessments of national seriousness about climate change, which in turn increases policy support.

If mass media prefers to put certain issue in public sphere, it gets priority in the national and international agenda. It has been established that the public relies on the mass media to gain information about issues like climate change; in this process, the media also renders the role of advocacy journalism. This is why Boykoff and Boykoff[56]; Boykoff and Rajan[57] 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[58] have mentioned 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 other issues. 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 Gavin[59] mentions about a news story carried by the *Guardian* on 23rd October, 2007 which mentions about a scientist who reported that "global warming is stronger than expected and sooner than expected".

CONCLUSION

Undoubtedly, mass media can spread knowledge about ways and means to mitigate the impact of climate change in our country which is one of the third highest emitters of carbon dioxide in the world. As it were, India is a vulnerable country to climate change and the change is beginning to have disastrous impact on issues like human health and disease burden is on the rise. Increasing infestations of vector borne diseases like malaria, chikungunya, and dengue becoming common in India and the healthcare sector is beginning to face the brunt of it. Food price inflation is sky rocketed with an imbalance in the demand and supply agricultural produce in country of billion plus population. Forest cover is shrinking and natural carbon dioxide sink is lost. The condition of air pollution in cities like Delhi is in media reports. One can imagine what will be the in next few years in most of the metropolitan cities of India where hundreds of vehicles are being registered every day. It is a matter of grave concern that availability of underground water is becoming scarce in cities like Bangalore and Chennai. Trade and commerce will be downside when winter garments will be less in demand and less in production. Global warming induced cyclones are being felt more and more

every year in the coastal states. Rivers are drying up and sea level is on the rise. Global warming is undoubtedly round the corner in India. Even a small child like SwarupDebbarma has felt that the climatic conditions of his home town are no longer the same and winters are not arriving on time.

Every dark cloud has a silver lining. The mass media of the country whether it be print or broadcast, can spread awareness among the public about sustainable practices on how to adopt less carbon dependent lifestyle. Though, global warming is definitely round the corner, we can defer it by reducing individual carbon footprints. If not adopted immediately, the consequences of global warming may lead to annihilation of all life forms on earth. If not adopted now, than never.

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