

Full Length Research Paper

Framing of environment in English and Tamil newspapers in India

Nirmala Thirumalaiah* and Arul Aram

Department of Chemistry, Anna University, Chennai-600025, India.

Received 7 October, 2016; Accepted 9 December, 2016

Media coverage of environmental issues helps the readers to understand the concepts that shape their beliefs and perspectives. Media professionals play a vital role on how the public perceives environmental issues. The media does the diverse framing of reality of environmental issues. The study aims to find how the English and Tamil newspapers in India have covered environmental issues and identify the differences among the newspapers based on region and language. Two English (The Hindu and The Times of India) and two regional language newspapers (the Dina Thanthi and the Dinamani) were selected for the study based on circulation and credibility. The print newspapers published in the calendar years 2014 and 2015 were analyzed to find the framing of environmental issues. The study found that the scientific (28%) and politics (23%) frames were the most prominent in the newspaper coverage. It also found that environment news stories were more of national (41%) and international (38%) than local (20%). The result suggests that the newspapers, especially in Tamil, should devote more space to the newer environmental issues, probably linking them with climate change as well. Sensitive reporting of environmental issues may help people to understand the complexity of the problems better.

Key words: Environment, newspapers, climate change, pollution, framing, journalists.

INTRODUCTION

India has experienced rapid industrialization resulting in major threats to environment. For instance, a chemical gas (methyl isocyanate) leak from a pesticide plant in Bhopal, Madhya Pradesh in 1984 killed thousands of people. The mishap was due to poor industrial regulations. After the disaster, environmental awareness and activism in India increased significantly. As a result, the Environment Protection Act was enacted in 1986, which

paved the way for the creation of the Ministry of Environment.

In the West, the environmental movement had arisen to protect endangered animal species and natural habitats. In India, however, it arose out of the imperative of human survival. This was an environmentalism of the poor, which married the concern of social justice on the one hand with sustainability on the other. It argued that present patterns

*Corresponding author. E-mail: nirmala_media@yahoo.in.

of resource use disadvantaged local communities and devastated the natural environment (Guha, 2013). Emissions from vehicles, factories, homes, and power plants degrade the environment. A recent report by the World Health Organisation (WHO) ranked several Indian cities, including New Delhi, among top 20 most polluted cities globally (The Times of India, 2015).

Water pollution is a major concern in India because it is not only destroying the ecosystem but also the leading cause of diseases and deaths. Almost 70% of surface water resources and groundwater reserves are contaminated by biological, toxic, organic, and inorganic pollutants. These resources are unsafe for human consumption as well as for other activities, such as irrigation and industrial needs. The degraded water quality can contribute to water scarcity as it limits its availability for both human use and for the ecosystem (Murty and Kumar, 2011).

Environmental communication helps people to understand the importance of preserving resources, to reduce the harmful impacts of human-made alterations, to be aware of the consequences of human activities, and to identify remedies. The role of media and communication are vital in defining the environment and environmental issues or problems. The public get most of the information in a mediated form. The news media is "important agents in the production, reproduction, and transformation of the meaning" (Carvalho, 2010).

Chipko movement is a huge protest in the early 1970s against deforestation by women hugging trees to stop them from being cut. The protest was led by Chandni Prasad Bhatt and Sunderlal Bahuguna, where a group of women opposed the felling of trees. Thousands of people across India supported this green movement. In the 1980s, a hydroelectric project in Silent Valley in Kerala was stopped, saving an evergreen forest. It was by a continuous protest by people and environmentalists. At that time, newspaper coverage was noticeable and a local daily *The Express* carried editorials that constitute a deliberate and strong tilt towards saving Silent Valley. It carried a feature explaining the importance of rainforests in layman's terms. A protest by Narmada Bachao Andolan against the construction of dams got sufficient media space. Today, the media hardly covers such issues. The media is more concerned about business rather than human rights (Bunsha, 2010).

The quantity of environmental coverage in newspapers has been increasing in recent times. Newspapers report environmental issues in different ways. For example, English newspapers use more space to report environmental problems compared to Tamil newspapers. So differences in environmental coverage are expected between English and Tamil newspapers. Previous studies have focused on English newspapers which are nationally circulated, but only the regional language press reaches the grassroots which give more access to lay voices as sources. Thus there is a need to analyze the

regional language press which reaches the grassroots in informing and communicating environmental issues. The research on Tamil newspapers is limited, so this study is a significant contribution in understanding the construction of environmental problems in Tamil newspapers.

The present study aims to analyze environmental issues reported in the English and Tamil newspapers and to identify the differences among the newspapers based on region and language. The objectives of the study are:

1. To examine how leading English and Tamil newspapers in the Tamil Nadu province of India have framed environmental issues
2. To analyze prominent frames used in environmental stories in the newspapers
3. To compare and contrast the English and Tamil newspapers in the coverage of environmental stories.

Environmental problems and newspaper coverage

Media coverage of environmental issues helps the readers to understand the concepts that shape their beliefs and perspectives. Media professionals play a vital role in how the public perceives environmental issues. The media does the diverse framing of reality of environmental issues. It is often the journalists who cover general stories and write on environment as well. They lack knowledge about the complex issues involved in environment and this leads to confused writing. Environmental news is influenced by advertising pressure, editorial policy and ownership, news cultures and the limitations of time and space (Anderson, 1997).

Environmental news items are used as filler items in the absence of something more urgent (Adam, 2000). A study by Boykoff and Boykoff (2007) examined climate science communication in the print and television media in the US from 1988 to 2004 and found that the news media plays a key role in shaping the climate change information and the increase in coverage was attributed to politics than nature science and climate talks. A study by Calderón et al. (2015) in Spanish-speaking online media during COP16 (Cancun, 2010) and COP17 (Durban-2011) found that the principal sources are politicians and it discussed that there exists a 'nationalistic domestication' and that media coverage does not respond to local needs.

According to Pompper (2004), the mainstream newspapers used frames that relied heavily on government and industrial sources where voices of the common people were suppressed. A study by Kostarella et al. (2013) found that there is reduced reliability in the Greek media with regard to the quality of environmental information. Francis (2014) did a content analysis of four newspapers in Kerala – the *Malayala Manorama*, the *Mathru Bhoomi*, *The Hindu* and *The New Indian Express*.

He found that the crime stories dominated all the sampled newspapers and agriculture stories were covered least. Boykoff (2010) indicated that climate change stories in the English language Indian print media coverage peaked around the time of summits in Copenhagen and Cancun.

Many studies have focused on how environmental issues in newspapers are being framed. Framing is widely used by the researchers in analyzing the news articles. Semetko and Valkenburg (2000) analyzed Dutch newspapers and identified generic frames based on previous research. The result indicated the Responsibility frame was found to be the most prevalent frame followed by the Economic frame. The prominence of the Responsibility frame shows the importance of political context in the framing of problems in the news.

Tong (2014) analyzed investigative reports on environmental problems in Chinese newspapers and found the Consequences and Responsibility frames were slightly prominent compared to other frames. The Chinese newspapers framed environmental problems in a way criticizing the economic priority and policies of the Chinese government which are accountable for environmental problems. News organisations in China encourage reporting on environmental problems and stress journalistic independence and social responsibility.

A study by Christos and Demetrios (2008) found that most of the environmental issues in the local newspapers concern events of regional significance, such as water shortage, forest fires, and desertification due to climatic conditions of Greece. Local newspapers ignored environmental issues of global interest, such as ozone depletion and global warming. There is also no regularity of publication in environmental articles. National newspapers dedicated most of their articles to environmental issues between May and June, because of World Environment Day. The study observed lack of cooperation between journalists and scientists both in local and national newspapers and lack of education among journalists.

A study by Dirix and Gelders (2009) examined climate change issues in French and Dutch newspapers. The Consequences frame was found to be the most prominent followed by the Responsibility frame. Many articles mention the need for urgent actions, refer to possible solutions and suggest that governments are responsible for and/or capable of alleviating problems. Chetty et al. (2015) investigated the framing of climate change science in New Zealand newspapers using content analysis and found that the Politics, Social Progress and Economic frames were most prominent in coverage. More emphasis on the Politics frame was in the coverage of actions and comments of world leaders in relation to talks and negotiations at various international policy events. Politicians and world leaders are primary actors accountable for the issues and to solve the problem.

A study by Neverla et al. (2012) highlighted that

providing knowledge on climate change issues in Bangladesh is difficult because of the low literacy rate. It has been found that the media represents government policy makers and environmental activists extensively, and the voices of scientists and lay people are under-represented. Limited journalistic capacity and dependency on western media are the major impediments to climate change in Bangladesh.

METHODOLOGY

Kitzinger (2007) mentioned that framing can be used to examine the production of media coverage: how journalists and their sources operate and how this can affect the way a story is told. How an issue is characterized in news reports can have an influence on how it is understood by audiences (Scheufele and Tewksbury, 2007).

Frames are interpretive storylines that communicate why an issue is a problem, who or what is responsible for it, and what should be done about it (Nisbet, 2009). This study analyzed the environmental stories based on quantitative and qualitative content analysis using framing paradigm. The Chennai editions of two English (*The Hindu* and *The Times of India*) and two Tamil (the *Dina Thanthi* and the *Dinamani*) newspapers were analyzed for the calendar years 2014 and 2015 to find the newspaper framing of environmental issues. *The Times of India* and *The Hindu* are nationally circulated newspapers which serve the English-knowing readers (mostly urban) in contrast to the *Dina Thanthi* and the *Dinamani* which mainly serve the rural and semi-urban readers. *The Hindu* and *The Times of India* have the average circulation of 1,518,082 and 3,057,678 respectively.

The Tamil newspapers the *Dina Thanthi* and the *Dinamani* have wide distribution in Tamil Nadu with the average circulation of 1,667,442 and 1,43,852 respectively (Audit Bureau of Circulations, 2015). Although the *Dinamani* has low circulation, it has niche educated readers, it is the sister publication of the English newspaper *The New Indian Express* and it is a credible regional language newspaper. *The Times of India* is the most read English newspaper in India. The

Dina Thanthi caters to the neo-literates and so are its journalists less educated but it has much influence at the grassroots.

All the four newspapers have online archives, available at www.timesofindia.com, www.thehindu.com, www.dailythanthi.com and www.epaper.dinamani.com (Figure 1). The news articles from the archives were taken for data collection using the following environmental search terms: 'climate change', 'global warming', 'biodiversity', and 'pollution' those appeared in the headline or in the story. In Tamil newspapers the terms looked for were '*paruvanilaimatram*' (climate change), '*ulagaveppamayam*' (global warming), '*paluyir*' (biodiversity), and '*masu*' (pollution), translations of the equivalent English words. These environmental themes were chosen after a pilot study of the content of the said newspapers in December 2013. Although the search terms were based on environmental themes, the frames adapted in the study were from the works of Semetko and Valkenburg (2000), McComas and Shanahan (1999) and Haila (2000).

A total of 955 news articles were retrieved from *The Times of India*, 810 articles from *The Hindu*, 376 articles from the *Dinamani* and 208 articles from the *Dina Thanthi* on environmental issues during the study period. For content analysis of newspaper articles, each article was treated as the unit of analysis to identify frames and to measure their frequency. Every story was coded for only the most prominent frame, even if it had more than one frame. The frames identified in the newspapers were Political, Economic, Responsibility, Scientific, Extreme Weather Events and Biodiversity,



Figure 1. A collage of the new papers under the study.

Table 1. Frame typology.

Frame	Key issues of themes raised or discussed in newspaper coverage
Responsibility frame	The responsibility or blame for the cause or the solution is placed on individuals and groups
Economic frame	It emphasizes the manner in which an issue will affect economically
Scientific frame	Environment as a scientific/technical issue, a matter of scientific expertise
Extreme weather events frame	Extreme weather includes unexpected, unusual, severe or unseasonal weather linked with climate change discourse
Political frame	Environment as a policy issue places onus on politicians, governments, diplomacy for solutions
Biodiversity frame	An increasingly new frame that talks about the diversity of plant and animal life in the world or in a particular habitat

Sources: Semetko and Valkenburg (2000), McComas and Shanahan (1999) and Haila (2000).

and they have been defined in Table 1. Some of the frames other than these which had minuscule presence were coded as 'Others' constituting a mere 4%. One-way anova was used to find any significant difference in frames between newspapers.

The contents from the four newspapers were analyzed only from the main sections of the newspapers that appeared on the front, Tamil Nadu, national, and international pages. The articles reported within the province of Tamil Nadu were considered as local environmental issues. The environmental stories within the country were considered national issues. The stories concerned with a foreign national and articles that reported on global issues were considered as international. Routine stories on the December 2015

floods were left out from this environmental thematic stratification as there were too many flood stories. Among the flood-related stories, only stories which had climate discourses were taken for the analysis.

Strangely, the then Minister for Environment and Climate Change, Prakash Javadekar, refused to link the floods directly to climate change saying that it was a natural calamity. "This can't be directly attributed to climate change; it is a natural calamity, but this calamity needs to be tackled effectively," he told a media conference in New Delhi on December 2, 2015. But two days later, before he left for the Paris talks, he told *The Hindu*: "What is happening in Chennai is the result of what has happened for 150

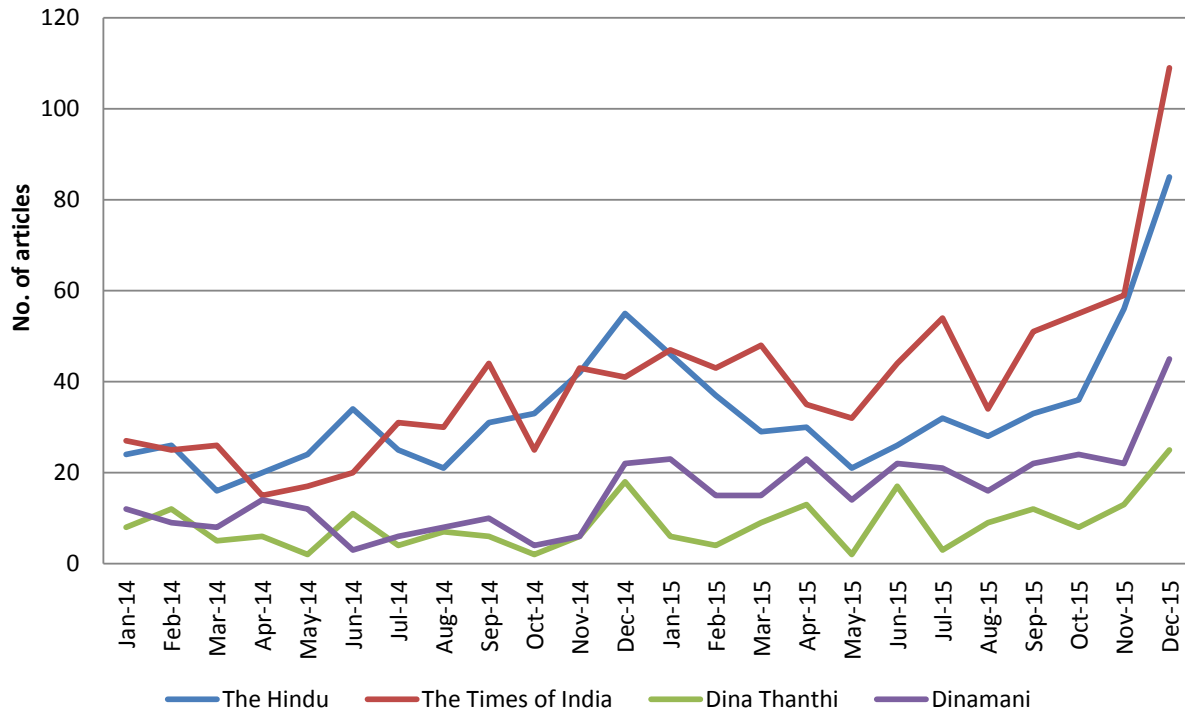


Figure 2. Environmental articles in *The Hindu*, *The Times of India*, the *Dina Thanthi* and the *Dinamani* from January 2014 to December 2015. Coverage increased during November and December 2014 and again spiked during November and December 2015.

Table 2. Prominent environmental frames in newspapers.

Primary frames	The Hindu (%)	The Times of India (%)	Dina Thanthi (%)	Dinamani (%)	Total (%)
Responsibilityframe	154 (19)	105 (11)	12 (6)	45 (12)	316 (13)
Biodiversity frame	49 (6)	115 (12)	21 (10)	26 (7)	212 (9)
Scientific frame	210 (26)	276 (29)	58 (28)	102 (27)	646 (28)
Extreme weather events frame	65 (8)	153 (16)	9 (4)	38 (10)	265 (11)
Political frame	178 (22)	191(20)	79 (38)	90 (24)	538 (23)
Economic frame	121 (15)	86 (9)	25 (12)	53 (14)	284 (12)
Others	33 (4)	29 (3)	4 (2)	22 (6)	88 (4)
Total	810	955	208	376	2349
X (mean)	115.714	136.429	29.714	53.714	-
StDev	68.468	79.858	28.082	30.945	-
X _{ave}	83.893	-	-	-	-

years in the developed world. That is what has caused 0.8°C temperature rise. And, therefore, they must now take action more vigorously.”

FINDINGS

The study helped to find the prominent frames of environmental coverage with respect to the newspapers *The Hindu*, *The Times of India*, the *Dina Thanthi* and the *Dinamani*. The study also identified the differences in the

news coverage with respect to number of articles, types of issues and article length covered.

Figure 2 shows the month-wise coverage of news articles for the years 2014 and 2015. Among the newspapers, the total news articles covered by *The Times of India* are found to be highest followed by *The Hindu*. Among regional language (Tamil) newspapers, the *Dinamani* (n = 376) published more articles on environment probably since it catered mostly to educated readers (Table 2). All the newspapers covered more

climate news during November-December when the annual global climate summits had taken place. This may be attributed to the climate change conferences that were organized in Lima (COP20) and Paris (COP21) during the fag end of November and the first half of December. When compared to 2014, the coverage increased in 2015, especially during November to December 2015, since the Paris conference of 2015 was much anticipated for arriving at a definitive agreement after the Copenhagen accord of 2009 (or satirically called 'Hopenhagen' to 'Brokenhagen' accord referring to its anticipated success or perceived failure). Added to this were the December 2015 incessant rains and floods in Chennai, the capital of the Tamil Nadu province, and elsewhere in the province.

Environmental frames in newspapers

Statistics were employed to measure and compare the frequency or prominence of frames. The overall prominence of each frame was measured as the percentage of articles out of the total ($n = 2349$), in which a given frame was coded as either absence (0) or presence (1). Although multiple frames could be coded as 'presence' in the text, only the most prominent frame was coded as 'presence'.

One-way ANOVA showed a significant difference among the frames used in the newspapers with $F = 5.5504$ and $P\text{-value} = 0.0049$. Percentage of presence of each frame is shown in Table 2. The English newspapers covered more articles ($n = 1762$) compared to the Tamil newspapers ($n = 584$). There were much more articles on environmental issues published in English language newspapers compared to regional language newspapers. The English newspapers constituted about two-thirds of the stories. This indicated that English newspapers gave priority than Tamil newspapers. The analysis reveals that the scientific and political frames were found to be prominent. Most prominent among these was the Scientific frame (28%) which included scientific explanation, research reports and opinions and all the newspapers covered science with equal importance.

The political frame (23%) was given priority in both regional and English language newspapers, though the *Dina Thanthi* gave excessive importance to the Political frame as the newspaper has simplified climate change news through political sources. Chetty et al. (2015) too found that politicians and world leaders are primary actors accountable for the issues and to solve the problem, and hence this frame gets prominence. All the newspapers represented the Responsibility frame (13%) with *The Hindu* outshooting the other newspapers given the social responsibility thrust the newspaper has. The Economic frame (12%) was covered reasonably. The Extreme Weather Events and Biodiversity frames were the least prominent in the study, making up 11 and 8%

respectively of the total frames coded (Table 2).

The Hindu covered more of the Biodiversity frame (15%) which included stories on climate change and its impact on coastal ecosystem, forests, etc. Since biodiversity is a new area of environment, it is *The Hindu* which has a separate Science Editor and science reporters could tackle it relatively better. India has enacted the Biological Diversity Act, 2002, and it has even assured a share of the profit got from a product developed from the traditional knowledge of people to be shared by the people themselves.

The Times of India dominates the Extreme Weather Events frame through the coverage of disasters and natural calamities reported from all over the country and the world. This may be due to the human interest thrust the newspaper has and the opportunities for such stories the extreme weather events provide (for example, rising temperatures triggering a glacier lake burst in the Himalayan region). Differences in the prominence of frames between newspapers were given below in Figure 3. The prominence of each frame was calculated by finding the percentage of the total scores coded for each newspaper's sub-samples.

The scientific frame requires some basic knowledge about the environmental science among journalists, and the frame found dominant presence in all the four newspapers. The opinions of climatologists and experts about Chennai floods, global warming and their impact were highlighted in the newspapers. The terms such as 'El Nino' and 'sea level rise' were often discussed in the articles. The following passages from *The Hindu* and the *Daily Thanthi* demonstrate this:

Since 1957 to 1980s, there were only about three El Nino years, categorised under strong or very strong, but from 1980s the frequency has increased and we have seen over 10 El Nino years, said Prof. Bhanu Kumar. Whenever, the surface temperature of Pacific Ocean rises by 2 to 5 degrees above normal, we have the El Nino factor working and it has direct impact on the northeast monsoon (*The Hindu*, December 12, 2015).

Pacific ocean temperature near South America is normally between 60°F and 70°F. When the temperature rises above 80°F, the region gets affected due to climate change. The El Nino effect causes increase in temperature in Southeast Asia and North Australia. The ocean temperature also increases because of El Nino. (Translated by the authors from *Daily Thanthi*, December 8, 2015).

In the latter report – that of the *Daily Thanthi* – there is a direct link made between El Nino and climate change which is wrong. Only the reduction in the interval between two El Ninos and the increase in the past average temperature of El Ninos are attributed to climate change. Such nuances are lacking in regional language newspapers.

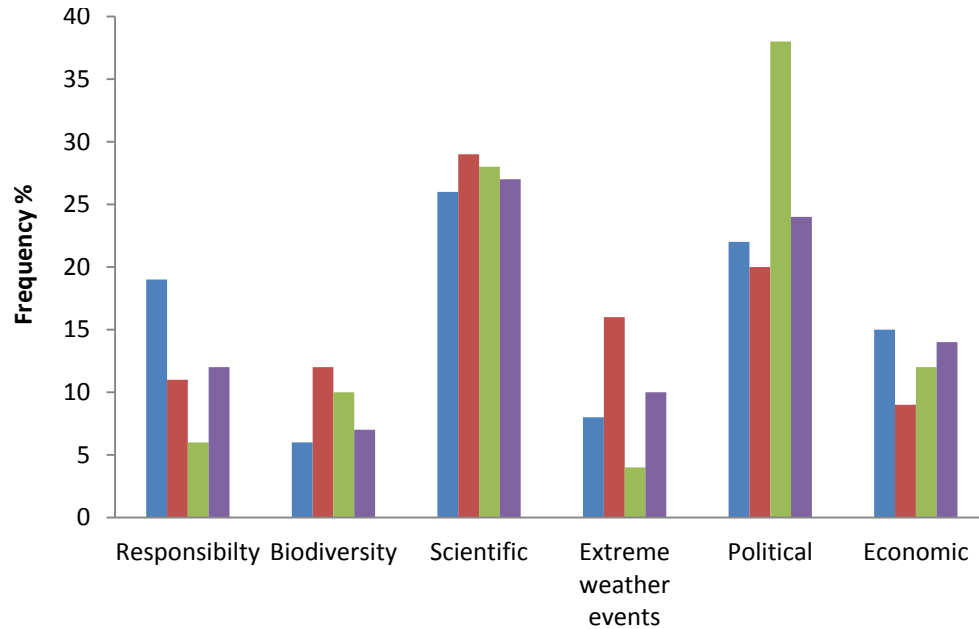


Figure 3. Percentage of each frame, comparing *The Hindu* (n = 810, blue), *The Times of India* (n = 955, red), the *Dina Thanthi* (n = 208, green), and the *Dinamani* (n = 376, violet).

Here is another news item titled “Scientists warn of more freak weather”, in *The Times of India*, which establishes the link between extreme events and climate change:

India will see more intense freak weather in the coming days, warned climate change scientists, days after hailstorms killed at least 10 people and wounded scores in Andhra Pradesh and similar storms destroyed crops across Karnataka and Maharashtra. . . . In absence of micro-level assessment, officials are struggling to answer why places like Hyderabad got heavy rainfall in early March. The sudden hailstorms destroyed crops over lakhs of acres in Warangal, Bidar in Karnataka or Nashik and Aurangabad in Maharashtra this week. Scientists predict that the frequency of extreme weather is likely to increase with fewer rainy days, but more quantum of rainfall, because of greater intensity and severe drought hitting other places (*The Times of India*, March 12, 2014.)

The public and government responsibilities in mitigating climate change actions were identified in the responsibility frame. Individual action and increasing awareness on climate change were also highlighted. The economic frame identified the economic arguments with respect to sustainability, economic growth, energy efficiency, low carbon tax, green initiatives, etc. There were more stories on decisions and policy making vis-à-vis climate change in *The Hindu* and *The Times of India*. To cite an example of the sort of coverage, here is a news item titled “Act now on climate change, says new IPCC report”,

India has to internalize climate considerations into

development planning, “Chairperson of the Intergovernmental Panel on Climate Change (IPCC) R.K. Pachauri on Sunday said the window of action on tackling climate change was closing rapidly and warned that the path of inaction would be more costly than the path of action. Speaking at the launch of the IPCC’s Synthesis Report in Copenhagen, he said the scientific community had done its job and was in a sense passing on the baton to politicians and decision-makers. The Synthesis Report points to the human influence on climate but also points out that there were means to limit climate change and build a sustainable future. He said the global community must look at the numbers in this report and bring about change. “There is no Plan B because there is no Planet B,” he said to questions. “The report tells us that we need to tackle climate change with a combination of adaptation and mitigation,” he said. Navroz K. Dubash, one of its lead authors, said that for India, “keeping the pressure on for global mitigation was also key” (*The Hindu*, November 3, 2014).

Analysis of region-wise coverage, issues covered and article length in newspapers

A chi-square test showed a significant difference among the four newspapers in terms of local, national and international coverage with a calculated chi-square value of 13.698 falling above the table value of 12.592 for the degree of freedom of 6 at 5% level of significance. The only perceived commonness is that all the four newspapers covered international and national stories

more than local. *The Hindu* covered more national stories (51%). But then, the *Dina Thanthi* presented more international news (48%) drawing from foreign news agencies and there were only a limited news generated locally. The local stories and issues were found to be less in all the newspapers. However, there were city-based (local) news stories on plastic waste, garbage crisis, 'Environment Day' and awareness programmes conducted in various schools and colleges, etc., were covered more in the month of June in Tamil newspapers.

Issues covered

Scientific information on environment such as El Nino, ocean acidification, sea level rise, and melting glaciers were covered in detail in English newspapers particularly quoting scientific sources. *The Hindu* featured articles on environment-related conflicts, indigenous tribal community and their livelihood, equity issues, health, species extinction, and deforestation. Warming of Himalayan regions, energy conservation and energy deficit were dealt with in the English newspapers. Nuclear power and their role in limiting carbon dioxide, sustainable energy such as solar and wind power to mitigate climate actions were also discussed in the news articles. 'Pollution' was the most frequently found key term in both English and Tamil newspapers. It was found that more than half of the articles appeared on pollution. Articles on air pollution appeared predominantly, followed by those on climate change / global warming. 'Climate change' and 'global warming' were coded as the same though newspaper stories used either of these terminologies. Compared to the *Dina Thanthi*, the *Dinamani* covered more scientific articles on climate change and pollution. The *Dina Thanthi* focuses more on current events as most of its readers comprise people with not more than elementary education.

The sensational news items and stories in the *Dina Thanthi* were especially targeted at such neo-literate, or even non-literate, audiences. Even today, this situation has far from changed. The *Dina Thanthi* is a standard presence in every teashop and saloon, even in urban areas where it is often read out loud to others and news discussed (Venkatachalapathy, 1994).

Article length

The length of the articles (measured by number of words) differed widely with respect to the coverage of environmental issues. In the English newspapers, most of the articles are between 500 and 750 words. *The Times of India* had the highest average word count, coming in at just over 1,000 words. One of the lengthiest articles (1,016 words) with infographics was titled "It's a bird" dated February 23, 2014 involving the general public in

avian surveys in helping ornithologists to compile data. Most of the articles in Tamil newspapers were fewer than 500 words. news items are at times shorter than 500 even in English newspapers whereas special articles are longer. The length of the articles had increased during November and December which may be attributed to the climate change summits happening then. Articles on pollution and climate change were covered in detail in all the four newspapers. Articles on biodiversity were covered in detail only in English newspapers. Although we have discussed article length and word count, they have not been taken as the units of measurement whereas each article was treated as a single unit.

DISCUSSION AND CONCLUSION

Environmental problems are portrayed as a scientific or political issue in the Indian newspapers. While English newspapers go in for scientific sources Tamil newspapers use international news agency reports on scientific matters. The government and political leaders are represented well, and this indicates that emphasis is given to policy makers. The English language newspapers had a good number of stories under the diverse environmental frames compared to Tamil newspapers.

The study indicated that environment news stories published in Tamil were more of national and international stories than local stories. The *Dina Thanthi* gave excessive importance to the Political frame as the newspaper has simplified climate change news through political sources, just as it happens for every issue for grassroots people in the developing world (to whom the newspaper caters to). It also presented more international news and there is no specific information being presented creatively with news generated locally. The voices of the common people and local environmental issues are under-represented. This shows that lack of capacity of journalists of regional language newspapers in picking up regional stories, leaving environmental issues as a distant reality to the readers. Articles that reported on environmental issues focused more on pollution which is associated with health. Climate change is affecting the ecosystem, but articles on climate change and global warming were reported least in Tamil newspapers.

Although newspapers cover environmental issues such as pollution, newer issues such as biodiversity, sea level rise, ocean acidification lack depth of coverage in Tamil newspapers. This may be due to lack of science reporters in Tamil newspapers. Journalists particularly in Tamil newspapers should be given training in covering environmental issues so that more and more environmental news is generated locally. This is in line with the findings of Neverla et al. (2012) that limited journalistic capacity and dependency on western media

are the major impediments. Even in English newspapers, such coverage is less unless the story is mediated through some sources such as non-governmental organizations or government reports/officials. The newspapers, especially those in Tamil, should devote more space to these environmental issues, probably linking them with climate change as well. The regional newspapers must carry articles and features explaining the importance of environment in simple terms to educate and persuade the people.

Environmental coverage in regional newspapers and local news stories might increase the public's interest and knowledge on environmental issues. Sensitive reporting of environmental issues may help people to understand the complexity of the problems better.

Conflict of interests

The authors have not declared any conflict of interests.

ACKNOWLEDGEMENTS

The first author would like to thank Anna University for the Anna Centenary Research Fellowship she got to undertake full-time Ph.D. research.

REFERENCES

- Adam B (2000). The media timescapes of BSE news: Environmental risks and the media. In A Stuart, B Adam, and C Carter (Eds), London: Routledge. P 117.
- Anderson A (1997). Media, Culture, and the Environment. New Brunswick, New Jersey, Rutgers University Press.
- Audit Bureau of Circulations - India. July-December (2015). Available at: <http://www.auditbureau.org>.
- Boykoff MT, Boykoff JM (2007). Climate change and journalistic norms: A case study of US mass media coverage. *Geoforum*, pp. 38:1190-1204. doi:10.1016/j.geoforum.2007.01.008.
- Boykoff M (2010). Indian media representations of climate change in a threatened journalistic ecosystem. *Clim. Chang.* 99(1):17-25.
- Bunsha D (2010). Lost in the Smog. In K Acharya, F Noronha (Eds), *The Green Pen: Environmental Journalism in India and South Asia*. Sage Publications India Pvt Ltd, New Delhi. P. 72.
- Calderón CA, Mercado MT, Raigada JL, Sucre EL (2015). Media coverage of climate change in Spanish-speaking online media". Available at: <http://eprints.ucm.es>
- Carvalho A (2010). Media(ted) Discourses and Climate Change. A focus on political subjectivity and (dis)engagement WIREs. *Clim. Chang.* 1(2):172-179.
- Christos AT, Demetrios PM (2008). Environmental news in Greece: evaluation of the way newspapers deal with environmental issues. *Int. J. Environ. Stud.* doi: 10.1080/00207230701832572.
- Chetty K, Devadas V, Fleming JS (2015). The framing of climate change in New Zealand newspapers from 2009 to June 2010. *J. R. Soc. New Zealand.* 45(1):1-20.
- Dirix A, Gelders D (2009). To frame is to explain: A deductive frame-analysis of Dutch and French climate change coverage during the annual UN conferences of the parties. *Public. Underst. Sci.* 19(9):732-742.
- Francis KC (2014). Ethics in newspaper journalism in Kerala. Ph.D. thesis submitted to University of Kerala.
- Guha R (2013). *The Hindu, The past and present of Indian environmentalism*, 27 March, 2013.
- Haila Y (2000). Beyond the nature-culture dualism. *Bio. Philos.* 15:155-175.
- Kitzinger J (2007). Framing and Frame analysis. In J. Kitzinger and E. Devereux. (Eds), *Media Studies: Key Issues and Debates*, Sage Publications India Pvt Ltd, New Delhi. pp.136
- Kostarella I, Theodosiadou S, Tsantopoulos G (2013). The coverage of environmental issues by the Greek media from the editors' perspective. Global virtual conference. Available at: <http://www.gv-conference.com>.
- McComas K, Shanahan J (1999). Telling stories about global climate change, measuring the impact of narratives on issue cycles. *Commun. Res.* 26(1):30-57.
- Murty MN, Kumar S (2011). *Water Pollution in India: An Economic Appraisal, Infrastructure Report*. Available at: <https://www.idfc.com/pdf/report/2011/Chp-19-Water-Pollution-in-India-An-Economic-Appraisal.pdf>
- Neverla I, Lüthje C, Mahmud S (2012). Challenges to climate change communication through mass media in Bangladesh: a developing country perspective. In Jespersen, Per Homann, Riis, Søren and Almlund, Pernille (Eds.) *Rethinking Climate Change Research: Clean-Technology, Culture and Communication*, Farnham: Ashgate, pp. 224-245.
- Nisbet MC (2009). Communicating climate change. Why frames matter to public Engagement. *Environment* 51(2):73-87.
- Pompper D (2004). At the 20th century's close: Framing the public policy issue of environment risk. In SL Senecah (Ed.). *The Environmental Communication Yearbook*, Mahwah, NJ: Erlbaum Associates 1:99-134.
- Scheufele DA, Tewksbury D (2007). Framing, agenda setting, and priming: the evolution of three media effects models. *J. Commun.* 57:9-20.
- Semetko HA, Valkenburg PM (2000). Framing European politics: A content analysis of press and television news. *J. Commun.* 50(2):93-109.
- The Times of India (2015). Capital breathes uneasy' September 25,.
- Tong (2014). Environmental Risks in Newspaper Coverage: A Framing Analysis of Investigative Reports on Environmental Problems in 10 Chinese Newspapers. *Environmental Communication*. doi.10.1080/17524032.2014.898675
- Venkatachalapathy AR (1994). Reading practices and modes of reading in colonial Tamil Nadu. *Stud. Hist.* 10 (2):273-290.