



Contents list available <http://www.kinnaird.edu.pk/>

Journal of Research & Reviews in Social Sciences Pakistan

Journal homepage: <http://journal.kinnaird.edu.pk>



A COMPARATIVE STUDY OF CLIMATE COVERAGE IN THE PRESS OF PAKISTAN AND THE UK

Kiran Javaid^{1*} & David Toomer²

¹National University of sciences and Technology, Islamabad, Pakistan

²Liverpool John Moores University, Liverpool, United Kingdom

Article Info

*Corresponding Author

Email Id: kiranjavaid.13@gmail.com

Abstract

Climate communication is significant in creating awareness about the longitudinal effects of climate crisis on the lives of people. This study aims to comparatively analyze the coverage given to climate change issue by the press of a developed and a developing country. The study considers the UK and Pakistani newspapers to evaluate the frequency, quantity, the categorical differences, and frames used to highlight climate issue in both the countries. The results should assist the media organizations as well as the policy makers to focus on climate communication as to mitigate its effects. A mixed methodology approach found that UK media is far ahead in coverage of climate change than that of Pakistani media, despite of being one of the most vulnerable states impacted by the climate crisis. The thematic analysis found out there exist a difference in framing climate communication in the media of both the countries, of them UK media being more focused towards the global climate impact, while in Pakistan the coverage is more inclined towards political framing of climate change issue. The study covers the gaps identified by previous researchers in having a scant literature on climate change issue in the third world countries as well as comparatively analyzing the differences to those of developed countries. Researchers should in future focus more on comparatively evaluating the visual and online media with respect to climate communication construct.

Keywords

Climate communication, Comparative analysis, Climate media, Pakistani press, UK press, mixed methods approach.



1. Introduction

According to the World Health organization, the recent disastrous floods of 2022 in Pakistan have impacted 6.4 million people, of which 15 million people have been displaced, 12,867 were injured, 1717 died and overall, 84 districts across the country have been hit by the calamity. Moreover, the World Bank expects the poverty rate of the country to rise by 2.5 to 4.0 percent as a dire consequence of the disaster's impact. Considering the high impact of Climate change in Pakistan, the media role is crucial in communicating and creating awareness because of the number of people impacted by it (Hussain *et al.* 2019). Researchers like Mattoo and Subranian (2013) have called climate change a threat to the survival of humanity rather than only a scientific notion and have emphasized on dissecting the concept to be easily understandable for the common people. Since, climate communication takes place through mass media, it then becomes the responsibility of media to inform the public about the menaces of climate change (Nwabueze & Egbra, 2016; Boussalis *et al.* 2016) and so is investigating the media attention towards climate change issue. However, Schafer and Painter (2020) identified the gaps in climate communication with respect to researchers being more focused towards Global North (Liu *et al.*, 2011) e.g., Canada (Davidsen & Garaham, 2014), UK (Painter & Gavin, 2016), Italy (Pasquare & Oppizzi, 2012). Few of the comparative studies have also been carried out like Shehta and Hopmann (2012) studied US and Swedish media, Nwabueze and Egbra (2016) focused on Nigeria and Ghana, Duan

and Takahashi (2017) did compare US and Chinese newspaper coverage of air pollution and a recent study of Yla-Anttila *et al.* (2022) on debate surrounding climate change in India and US. However, 52.8% publications in climate communication only covers the US while the Global South has mostly been ignored in Climate communication literature with almost no studies on third world countries, even of those which are the most vulnerable. As per the Global climate risk index Pakistan is one of the most vulnerable states among the list of countries most affected by the climate change in the long run. Comfort, Tandoc and Gruszczynski (2020) states that it is necessary to be aware of climate discourse in media specially of those countries in the global South who are bearing the brunt of climate crisis, as environmental problems in these countries receive less coverage except when hit by the disaster. Though past research has focused on media attention to climate communication (Schmidt, 2013), however, none of these studies focused on comparatively analyzing the climate communication in the countries most affected by the climate change like Pakistan to those with a developed world. There is a notable research gap in climate communication where the national language is not English, of among them Asian countries at the top (Billet, 2009). IPCC in its report also stressed on conducting climate research on South Asian countries due to being inadequate. This study attempts to cover the literature gap where most climate change vulnerable countries are neglected in both media and literature, especially when it comes to their comparative

analysis with the developing world. Since Pakistan is rated top ten country on Global climate change vulnerability index and the most effected one in the South Asia region, according to German watch report, we aim to study the role of Pakistani press in highlighting climate change. Also, since most of the climate literature is focused on US, we take UK as a developed country to compare its press with that of Pakistan. It is because of two reasons, firstly, none of the previous studies compared UK with any developing country, particularly South Asian, though the concept of Climate change in the UK dates to 1988 (Jaspal & Nerlich, 2014) and because the climate circumstances of both the countries match with each other like flooding every year. This research is significant to assess as to what kind of content is being projected on print media of both the countries using framing theory as framing is appropriate where a single concept is of equal relevance to countries being studied as in the case of climate change which is important for both the countries. To further our understanding, the objectives driving this study are to not only assess the amount of coverage given to the climate change issue in both the UK and Pakistan, but also to investigate how this coverage differs in both countries in terms of volume, type of story, length of articles, impetus behind the story as investigated in the study of Nwabueze and Egbra (2016), however their focus was on comparison of developing countries both African. This study also assesses that how climate change is framed in press of Pakistan and the UK in comparison to each other and investigates the similarities and differences that contributed to those frames in both

the countries. The research questions driving this study are as follows: How much coverage is given to climate change issue in the press of UK (developed country) and Pakistan (developing country)? How this coverage of climate communication is different in both the countries in comparison to each other? Which frames are used in the press of UK and Pakistan to highlight climate change issue? To investigate these questions mixed-methods approach is used as first two questions are predictive in nature that generates quantitative data, hence a quantitative content analysis is carried out to seek answers for RQ 1 and RQ 2, while thematic analysis is conducted to answer RQ 3 as the approach is to identify themes and sort out the frames based on the analysis of the text. Systematic and census sampling is used for both the qualitative and quantitative data analysis respectively and the unit of analysis is news articles from the broadsheets of each country based on their popularity, circulation, and similarity to each other.

The article is structured as follows: First, a detailed discussion on climate change and climate communication in reference to the previous literature in both the countries. Next, the hypotheses statements are tested using the appropriate method for the study. Furthermore, data collection, sampling technique, ethical considerations, coding techniques and time frame of the study is also discussed. The article concludes with the findings, limitations, and future implications of the study.

2. Literature review

Dessler (2016) in his book “*Introduction to modern climate change*” simplified the concept of climate change by differentiating it from weather, as per him weather is short term atmospheric state that is vital to carry out day-to-day activities, while climate is continuity of certain type of weather for a long period, particularly for years. However, there is a spectrum of opinions surrounding the concept of climate change in literature, ones who believe earth to be dominion meaning the resources of earth can be used by humans in whatever way they like while the land ethic frame school of thought believe that humans should be cautious while utilizing the earth resources (Weems and Subramaniam, 2017).

As mentioned in a research study by Ejaz *et al.* (2022) in an online survey from among 40 countries it was concluded that media in both forms mainstream and online is important in getting information relevant to Climate change. In disaster management communication before and after it is the key to minimize the damage (Zaheer, 2016) and media plays a crucial role in it. In literature a shift of debate from awareness to implementation is on the rise (Carniero *et al.* 2022), however there is still a need to focus on climate change awareness particularly in countries where the threat is higher and climate information is inattentive, as Schimdt *et al.* (2022) implied that news media hasn't given ample attention to new information surrounding the construct of climate change, however, even with the smaller coverage it was able to contribute towards diminishing the knowledge gap. But in countries like Pakistan

which despite of being prone to the effects of climate change the most, have scant climate research and meagre climate journalism as well as socio-economic challenges for journalists to cover climate information (Sharif & Medvecky, 2018). In UK there has been an ample amount of recruitment of journalists with respect to covering Climate journalism between the time span of 1989 and 2005, however since 2005 the data is not certain (Schafer & Painter, 2020) and some researches even mentioned reduction of climate specialists reporters in media houses (Boykoff & Yulsman, 2013), though quality newspapers like Guardian and Independent are paying more attention to climate communication (Doulton & Brown, 2009).

But at the same time there exists a strong lobby especially in UK press which promotes climate skepticism, promoting the agenda of right-wing parties (Painter, 2015; Atanasove & Koteyko, 2017). This notion is validated by analysis of 3200 articles in British newspaper by Painter and Gavin (2016) confirming that skeptical voices are on the rise in UK press. But few researchers like Bruggemann and Engesser (2017) stressed the need to look at the real problem of climate change and pointed out problem in climate framing on media with respect to acceptors and deniers of climate change, which they stated is not helpful to understand the real problem. As frames mostly forms the agenda of a media organization which are subsets of the issue and influence audience's attitude towards that specific matter (Rebich-Hespanha *et al.*, 2015). Journalists choose certain frames to define a topic which in turn becomes the

agenda of the news organization when used over a long time (D'angelo & Kuypers, 2010). Since frames can be pro, anti and neutral (Nisbet, 2009) they are essential for journalists (D'angelo & Kyupers, 2010) and can be become dominant over

each other because of frequency of their usage (Entman, 1993). Nisbet (2009) identified several frames which are used while discussing climate change issue. These include:

Table 1: Climate Changes

Social progress	For improving life quality and presenting problem solutions.
Economic progress	It involves investment, risks and benefits for the businesses.
Morality	Defining boundaries to address the issue.
Scientific	Scientifically understanding the problem and its solution.
Pandora's box	Call of solution to combat the problem on basis of urgency.
Politics	Politicization of the issue.
Alternative path	Comprising
Conflict	Battle of different groups having varying opinions

However, climate change framing varies across different cultures (Kukkonen *et al.* 2018). Recent research on Climate framing suggest that the focus was more on economic and policy frames particularly in USA and on policy surrounding the environmental risks (Yla-Anttila *et al.* 2021; Zhang *et al.* 2022). Garth and Roberts (2022) study of fifty states in the US also found out the dominance of economic framing in Climate communication but for the countries like India the environmental threat is framed for awareness purposes (Yla-Anttila *et al.* 2022). The literature of Climate change though consisted of research on the topics of media coverage, skepticism around Climate change, evaluation of newsroom operations to study climate change information, there still exists a literature gap in comparative analysis of countries most affected by it to that of which are developed and also how the climate news is framed in media of both the Global South and North.

3. Method

This exploratory study has used Mixed Method Approach to answer separately posed research questions with a convergent design where both the quantitative and qualitative data is collected separately and then results are merged in the discussion section for the interpretation- this design is useful for those who are in need to seek out answers for both quantitative and qualitative research problems in a single study (Creswell, 2015). The method used to answer first two proposed research questions for this research is quantitative content analysis while for the third posed question thematic analysis (Gale *et al.* 2013) is used as to explore the frames in UK and Pakistani press. Unit of analysis for this study is climate change news articles in Pakistani and UK newspapers. Two newspapers from each country are selected based on their political leanings as there is strong debate among right and left inclined newspapers in UK on climate change. Two *broadsheet* papers *The Guardian* (Centre-left) and

The Times (conservative) have been selected. Guardian being the popular paper among left wing and Times being skeptical about the issue of Climate Change is helpful to form and compare narrative of both the newspapers. Also, the reason for selecting broadsheet papers is to match and compare with Pakistani newspapers as the newspapers in Pakistan are broadsheets. English newspapers in Pakistan are elitist, mostly popular among the liberals and have more targeted towards policy makers, politicians, bureaucracy, and literate class to than of their Urdu counterparts which targets the middle-class strata (Hussain *et al.* 2019; Ejaz *et al.* 2022), hence from Pakistan *Dawn* (centre-left) and *The News* (right wing) are selected. This is further to avoid the language bias as well as the themes easier to devise. These English papers have the highest circulation figures in the country and are the most popular English newspapers. The time frame for this research project is from 30th November 2015 to 11 December 2012. The reason for taking this period of time is because of Paris climate change conference which took place from 30th November to 11th December, 2015. The reason behind choosing Climate change conference for coverage analysis is because media gets the opportunity to highlight climate crisis during this time the most, specifically converting the global issues into the local context (Hussain *et al.* 2019) and also because this conference helped countries like Pakistan and UK to establish their own domestic policies to tackle climate change issue (Falkner, 2016). Moreover, researchers need similar enough time frames to compare issues (Sandbrand-

Nisipeanu, 2016). In addition to this, data was easily available both in Lexis-Nexis database and in Pakistani newspaper archives of this time frame. Total 235 articles have been retrieved from *LexisNexis* and *archives* by using the search terms “Climate change”, “global warming”, “Paris climate change conference”, during the given time. The articles with no relevance to climate change were ignored and repetition mode was kept off as to avoid replication of data. For the analysis of quantitative data all the articles including news, editorials, features and opinions were taken during the above-mentioned time period by using *census sampling* method. However, for thematic analysis *systematic sampling* was carried out. First after quantitative analysis of data, news articles are extracted and then every 5th news article is selected to carry out thematic analysis on it. Thematic analysis is carried out on total 38 articles during the given time frame of the Paris climate change conference. Themes are identified through repetitions of words, prominent catchphrases, and keywords. Since, the study is cross-sectional in nature the collected data is transferred to SPSS software for the purpose of quantification and to generate the themes later. Coding manual (Appendix 1) is designed for this specific study to sort out different aspects of climate change news coverage. As according to Bryman (2015) it is important to consider certain aspects while designing coding sheets like the person who has written the news piece, main focus of the item, context of the news piece etc. The coding sheet in this research project is designed to find the answer particularly for quantitative content analysis as to

test first proposed hypothesis. The codes developed are clear and footnotes are provided to avoid any kind of ambiguity. To analyze the articles and analyze the difference among all four newspapers the following categories are considered as in the study of (Nwabueze and Egbra, 2016).

- Volume of coverage i.e., how many articles are there of climate change news coverage in each newspaper? Also, number of articles each day is also considered.
- Quantity of words used to describe the news story.
- Type of news story i.e., article, features, editorials, column etc.
- Focus on climate change i.e., direct, indirect, or mentioned only in passing
- Story impetus i.e., disaster, climate conference, scientific meetings, political statements.

Each category was assigned codes to carry out quantitative analysis. The range of codes lies from 1 to 5 in most cases as per the division of categories. These codes with sub-categories can be seen in Appendix 1. For the research question 3 this study is not taking pre-defined themes instead frames are identified after sorting out the sub-themes and from them taking out the main themes. First the researcher familiarized herself with the data, then a thorough theme identification process is carried out.

4. Results and Discussion

Out of 235 newspaper articles analyzed, 164 articles on climate change were of The Guardian,

with The Times being the runner up while Pakistani newspapers Dawn and The News lies far behind both the British newspapers (Table 1). Table 2 summarizes the results of Research question 1 where the purpose was to seek out amount of coverage given to Climate change issue in both the countries. Comparatively, British newspapers are far ahead than the Pakistani newspapers with total 206 published articles during Paris climate change conference with a percentage of 87.7% which shows the difference of developed and developing countries the way they look at Climate change issue as Pakistani newspapers only published 29 articles out of 235 with a total percentage of 12.3 %. To seek out answer to research question 2 i.e., how the coverage of Climate change issue differs by the press of both countries several things are considered like volume of coverage by each newspaper on a single day, type of article, number of words used to describe the article, focus on Climate change issue and impetus behind the story.

The results show British newspapers on daily basis published more than three articles most of the times while the trend of publishing one article each day in Pakistani newspapers was more common. Furthermore, the word range for UK newspapers to describe the story mostly lies within 500–999-word range while out of 29 articles on Climate change 14 articles were less than 500 words, 14 ranged between 500-999 words and rest of the one article was more than 1000 words contrasting with British newspapers where there were 44 articles more than 1000 words as shown

in Table 3. It is important to find out type of the story used for paying attention to the issue. As it can be seen in Table 3, 153 stories were news articles in UK newspapers, 30 features, 5 editorials and 18 columns were published. While in Pakistani newspapers 26 news stories and 3 editorials were published during the time frame of Paris Climate Change Conference. It is important to consider whether articles were directly focused on climate change, there was an indirect focus or climate change was only mentioned in passing. The explanation of indirect focus is mentioned in Appendix 1. As it is shown in Table 3.4 the 60% of UK articles focused directly on climate issue however Pakistani newspapers proportion was more in terms of direct focus with a percentage of 76, though the total number of articles published in Pakistani newspapers was far less than UK newspapers. 31.07% of British newspapers focused indirectly on Climate issue while 8.73% of articles only mentioned the word in passing. On the other hand, articles in Pakistani newspapers 17.2 % focused indirectly on climate issue and 6.8% times they only mentioned the issue in passing. It is also interesting to find out the drive behind the story to check the differences existing between both the developed and developing countries particularly UK and Pakistan. Most of the British newspaper published climate change news articles to give general information regarding Climate change issue to general audience as shown in Table 4. The other times most of the time impetus behind the story was political statements and as the time frame is related to Paris Climate Change Conference, many of the news

stories focused on the conference. Table 4 shows that Guardian published maximum 52 articles for general information on Climate issue, while The Times most of the times published articles because of climate change conference. Same strategy is adopted by Pakistani newspaper, The News published the climate issue with respect to Paris conference as out of 12 stories 7 were on same genre. Dawn on the other hand was more political and focused on political statements related to climate issue for publishing of news stories with a total number of 7 news on same topic out of 17.

To address research question 3 i.e., how climate change news is framed in newspapers of both the UK and Pakistan respectively, thematic analysis has been carried out. The following themes emerged after careful observation and analysis of data. Guardian framed the climate issues of other countries like India, China, USA to highlight the climate impact. Few examples are:

“India unveils global solar alliance of 120 countries at Paris summit.”

“France moves at breakneck speed to get Paris deal done by the end of the week.”

“African forestry scheme aims to build prosperity by restoring landscape.”

“China joins poor countries in pointing fingers at wealthy states over emissions”

It is interesting frame to use as no other newspaper used in this study, has used this specific frame to highlight the global impact of Climate change on other countries. However, many of the stories are solely based on political statements. Political frame has been used to stress the climate issue by The Times and Pakistani Newspaper the News as

well. It has been observed that Guardian framed many news stories to portray Climate change as an emerging threat which is unable to overcome if in time solutions are not given. News stories drew attention to upcoming threats, ignorance of local government, skepticism of conservative groups and problems of locals due to everyday disasters. E.g., have a look at few of the statements used by the newspapers to pinpoint the dangers of Climate change. “That hour is almost upon us” “If emissions continue, they would lead to disastrous warming”

“People are living with cancer due to air pollution”.

The Guardian not only informed public to the dangers of Climate change and global warming but also framed several of its stories to call for a climate action. Many of the news stories proposed or highlighted solutions to tackle the climate issue. For example, statements like this have been used by the newspaper: “Wind energy is a key climate change solution” “How cycling could help the Paris climate talks change the world” “Adoption of climate change strategies by businesses have been brought to attention. Long term solutions in the news articles have been proposed and there is call for urgent action in several of the articles. One interesting theme which emerged from conservative newspaper The Times is that it framed stories around scientific statements. Whether it is doubt of scientists on political action, general information about how climate change is happening or scientific estimation of what is going to happen in future. The Guardian though took several perspectives it failed to frame stories

around scientific information. There is skepticism around that conservative newspaper don't give enough news coverage to scientific stance, but The Times negated this stance by framing news stories around this very basic notion. Contrary to the Guardian, stories of The Times revolved around the positive approaches which had been taken to tackle climate change. Stories are framed in such a way that it gives a feel that enough action has been done to combat Climate change and there is nothing further which needs to be done now. For example, according to the newspaper after the last conference in Stockholm in 1972 a lot of progress has been done. The Pakistani newspapers as shown in quantitative analysis were far behind their British counterparts in covering climate issue. It has been observed as the articles were less, very few themes emerged out of that and stories were framed around the basic concepts of climate change issue. Dawn being considered as left-wing newspaper in the country framed its climate stories around government actions. Also, foreign policy emerged as a subtheme as government was more interested in India Pakistan relations than on climate change issue. The newspaper uses the sentences like: “The PM speech was less than three minutes, barely touching upon Pakistan's vulnerability to the impacts of climate change.” “Speech had no ambition, no vision” Other times, during the time frame of this study the newspaper side lined the Paris summit and were mostly focused on meeting of India and Pakistan Prime Ministers in a critical way. Hence, most of the stories are framed in such a way that they pinpoint the faults of government

and not solely on dangers of climate change. The second theme which was observed is Paris climate change conference. Most of the stories of the newspaper revolved around the conference i.e., how many countries participated, budget of the conference, global leaders' negotiations, promises by the world leaders to their public, frauds committed. The other Pakistani broadsheet uses several political concepts to frame the climate news stories. Political negotiations and previous failures emerged as subthemes of the main frame. The newspaper focused on global alliances and negotiations of world leaders not only during the Paris climate change conference but also has highlighted alliances to utilize natural resources and eradicate the usage of fossil fuels by the politicians around the world. It is interesting to note that the newspaper framed its stories around proposing the scientific solutions to the problems like The Guardian. It focused on progress in climate action, scientific statements by the experts, information on how to utilize natural resources and benefits of using them. Few of the statements which highlighted the importance of using natural resources are as under: "Geothermal is growing modestly, providing 12 gigawatts of electricity annually" or using the sentences like: "Slashing greenhouse gas emission" Analyzing the frames used by media of both countries through thematic analysis it has been observed that even the frames used to cover climate issue are not same in both the countries apart from political frame. This validates the research carried out by Lyytimakio and Tapio (2009) which states that political actors effect the news formulation process specially to

build their agenda. However, the scope of this research is not enough to evaluate agenda behind the climate change news process and further research is needed on that. The use of political frame by all four newspapers also backs the statement of Dando (2015) who stated that political opinions are given more importance while covering climate news stories even if their knowledge is not enough to understand the issue.

5. Conclusion

As climate change is the global problem, and media along with other institutions has a crucial role to play in understanding the very basic idea of it, the studies on the relationship of both helps to understand how efficiently media is working. Comparative studies further help to realize the extent how much a problem is considered global. This study compared the newspaper coverage of two countries i.e., one developed (UK) and the other developing (Pakistan). The basic conclusion drawn from the study is that UK media i.e., developed country newspapers are paying more attention to climate change issue than developing country's newspapers despite of them being the most vulnerable ones. Thematic analysis highlighted that climate news framing varies in both the countries except for political frames and that climate issue itself is given more coverage when politicians are involved. In conclusion this study adds to the literature of climate communication with a focus on one of the most vulnerable countries of Global South i.e., Pakistan in comparison to the country which has been extensively researched, addressing the concern raised by Schafer and Painter (2020) of Global

South being neglected in climate communication literature. Further research is needed to do comparative analysis of more developed and developing countries with a focus on visual and digital medium of climate coverage. As the frames in this study are not validated yet, future research can be conducted to cover this gap. This research will be helpful for media organizations to devise their climate coverage strategy with respect to more frames.

References

- Atanasova, D. and Koteyko, N., (2017). Metaphors in Guardian Online and Mail Online opinion-page content on climate change: War, religion, and politics. *Environmental Communication*, 11(4), pp.452-469.
- Billett, S., (2010). Dividing climate change: global warming in the Indian mass media. *Climatic change*, 99(1), pp.1-16.
- Boussalis, C., Coan, T.G. and Poberezhskaya, M., (2016). Measuring and modeling Russian newspaper coverage of climate change. *Global Environmental Change*, 41, pp.99-110.
- Brüggemann, M. and Engesser, S., (2017). Beyond false balance: How interpretive journalism shapes media coverage of climate change. *Global Environmental Change*, 42, pp.58-67.
- Bryman, A., (2015). *Social research methods*. Oxford university press.
- Boykoff, M.T. and Yulsman, T., 2013. Political economy, media, and climate change: sinews of modern life. *Wiley Interdisciplinary Reviews: Climate Change*, 4(5), pp.359-371.
- Carneiro, B., Resce, G., Läderach, P., Schapendonk, F. and Pacillo, G., (2022). What is the importance of climate research? An innovative web-based approach to assess the influence and reach of climate research programs. *Environmental Science & Policy*, 133, pp.115-126.
- Comfort, S.E., Tandoc, E. and Gruszczynski, M., (2020). Who is heard in climate change journalism? Sourcing patterns in climate change news in China, India, Singapore, and Thailand. *Climatic Change*, 158(3), pp.327-343.
- Creswell, J.W., (2015). *A concise introduction to mixed methods research*. Sage Publications.
- Dando, V.W., (2015). *Mapping the media contours of global risks: a comparison of the reporting of climate change and terrorism in the British press* (Doctoral dissertation, Cardiff University).
- D'Angelo, P. and Kuypers, J.A. eds., (2010). *Doing news framing analysis: Empirical and theoretical perspectives*. Routledge.
- Davidson, C. and Graham, D., (2014). Newspaper Reporting on Climate Change, Green Energy and Carbon Reduction Strategies across Canada 1999–2009. *American Review of Canadian Studies*, 44(2), pp.151-168.
- De Silva-Schmidt, F., Brüggemann, M., Hoppe, I. and Arlt, D., (2022). Learning about climate politics during COP 21: Explaining a diminishing knowledge gap. *Public Understanding of Science*, p.09636625211068635.

- Dessler, A., (2016). *Introduction to modern climate change*. Cambridge University Press.
- Doulton, H. and Brown, K., (2009). Ten years to prevent catastrophe? Discourses of climate change and international development in the UK press. *Global Environmental Change*, 19(2), pp.191-202.
- Duan, R. and Takahashi, B., (2017). The two-way flow of news: A comparative study of American and Chinese newspaper coverage of Beijing's air pollution. *International Communication Gazette*, 79(1), pp.83-107.
- Entman, R.M., (1993). Framing: Toward clarification of a fractured paradigm. *Journal of communication*, 43(4), pp.51-58.
- Ejaz, W., Ittefaq, M. and Arif, M., (2022). Understanding influences, misinformation, and fact-checking concerning climate-change journalism in Pakistan. *Journalism Practice*, 16(2-3), pp.404-424.
- Falkner, R., (2016). The Paris Agreement and the new logic of international climate politics. *International Affairs*, 92(5), pp.1107-1125.
- Gale, N.K., Heath, G., Cameron, E., Rashid, S. and Redwood, S., (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC medical research methodology*, 13(1), p.117.
- Garth, A. and Roberts, T., (2022). Economic framing dominates climate policy reporting: a fifty-state analysis. *Climatic Change*, 172(3), pp.1-21.
- Hussain, M., Saleem, N. and Ishaq, N., (2019). Frames for United Nations Climate Change Conference 2015 Comparison of Elite Dawn and Popular Jang Newspapers Evidence from Pakistan. *Pakistan Social Sciences Review*, 3(1), pp.292-304.
- Jaspal, R. and Nerlich, B., (2014). When climate science became climate politics: British media representations of climate change in 1988. *Public Understanding of Science*, 23(2), pp.122-141.
- Liu, X., Lindquist, E. and Vedlitz, A., (2011). Explaining media and congressional attention to global climate change, 1969-2005: an empirical test of agenda-setting theory. *Political Research Quarterly*, 64(2), pp.405-419.
- Lyytimäki, J. and Tapio, P., (2009). Climate change as reported in the press of Finland: From screaming headlines to penetrating background noise. *International Journal of Environmental Studies*, 66(6), pp.723-735.
- Mattoo, A. and Subramanian, A., (2013). A 'Greenprint' For International Cooperation on Climate Change.
- Nisbet, M.C., (2009). Communicating climate change: Why frames matter for public engagement. *Environment: Science and Policy for Sustainable Development*, 51(2), pp.12-23.
- Nwabueze, C. and Egbra, S., (2016). Newspaper framing of climate change in Nigeria and Ghana. *Applied Environmental Education & Communication*, 15(2), pp.111-124.

- Painter, J., (2015). *Media representations of uncertainty about climate change* (Doctoral dissertation, University of Westminster).
- Painter, J., and Gavin, N.T., (2016). Climate skepticism in British newspapers, 2007–2011. *Environmental Communication*, 10(4), pp.432-452.
- Pasquaré, F.A. and Oppizzi, P., (2012). How do the media affect public perception of climate change and geohazards? An Italian case study. *Global and Planetary Change*, 90, pp.152-157.
- Rebich-Hespanha, S., Rice, R.E., Montello, D.R., Retzloff, S., Tien, S. and Hespanha, J.P., (2015). Image themes and frames in US print news stories about climate change. *Environmental Communication*, 9(4), pp.491-519.
- Sandbrand-Nisipeanu, J., (2016). *Media Coverage on Climate Change: An Analysis of the Relationship between Newspaper and Government Frames* (Doctoral dissertation, University of Kent,).
- Schäfer, M.S. and Painter, J., (2021). Climate journalism in a changing media ecosystem: Assessing the production of climate change-related news around the world. *Wiley Interdisciplinary Reviews: Climate Change*, 12(1), p. e675.
- Schmidt, A., Ivanova, A. and Schäfer, M.S., (2013). Media attention for climate change around the world: A comparative analysis of newspaper coverage in 27 countries. *Global Environmental Change*, 23(5), pp.1233-1248.
- Sharif, A. and Medvecky, F., (2018). Climate change news reporting in Pakistan: A qualitative analysis of environmental journalists and the barriers they face. *Journal of Science Communication*, 17(1), p. A03.
- Shehata, A. and Hopmann, D.N., (2012). Framing climate change: A study of US and Swedish press coverage of global warming. *Journalism Studies*, 13(2), pp.175-192.
- Weems, C., (2017). Reframing Climate Change for Environmental Health. *Journal of Environmental Health*, 79(8), p.24.
- Ylä-Anttila, T., Eranti, V. and Kukkonen, A., (2022). Topic modeling for frame analysis: A study of media debates on climate change in India and USA. *Global Media and Communication*, 18(1), pp.91-112.
- Zaheer, L., (2016). Natural Catastrophes and Role of Pakistani Mass Media. *Journal of Political Studies*, 23(1).