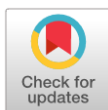


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- Author (s):** Shahla Riaz and Farrukh Shahzad
- Affiliation (s):** Bahria University, Islamabad, Pakistan
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Beyond Climate Visibility in the Global South: Ecological Risk Hierarchies and Framing Asymmetries in Pakistani Mainstream Media Climate Reporting

Shahla Riaz* and Farrukh Shahzad

Media Studies, Faculty of Humanities and Social Sciences, Bahria University, Islamabad, Pakistan

Abstract

In climate-vulnerable Global South settings, climate journalism is assessed largely through its visibility during disasters. This article argues that visibility is necessary but insufficient: journalistic performance depends on whether coverage explains causes, evaluates responsibility, and articulates responses. The objective of this study is to examine not only whether climate stories are present across ecological-risk clusters in Pakistan's media, but whether that coverage performs four framing functions of Problem Definition, Causal Diagnosis, Moral Evaluation, and Treatment Recommendation. Using quantitative content analysis, the study examined climate coverage in English- and Urdu-language newspapers and television news bulletins between 2022 and 2025, with each framing function assessed through a set of review-validated climate-communication strategies. Climate-story presence differed significantly across ecological-risk clusters: sudden, visually dramatic events such as floods and glacial outbursts received the greatest visibility, whereas slow-onset threats such as drought and water scarcity received the least. Among the coverage that carried climate stories, the four framing functions also differed significantly. Reporting was strongest at defining the climate problem and diagnosing its causes, weakest at moral evaluation, and intermediate at treatment recommendation, suggesting that media coverage is more likely to identify climate-related risks than to assign responsibility for these risks or propose potential solutions. The findings reveal a dual asymmetry: acute, crisis-compatible hazards attract greater visibility, while framing moves less consistently from identifying harm toward explaining causality, assigning responsibility, and recommending credible responses. The article advances climate journalism beyond episodic visibility toward sustained, causal, accountable, and response-oriented reporting.

Keywords: climate reporting, ecological risk, Global South, journalism

*Corresponding Author: shahlaz.riaz1@gmail.com

practice, media framing, Pakistan

Introduction

Journalism practice is now being put to the test by climate change. The problem is not just highly technical, but also contentious, political, and spread out over long time frames. In societies that are vulnerable to the changing climate, journalists need to report on hazards which are both immediate and structural: a flood is a breaking event, but it is also an indicator of exposure, infrastructure, land use, institutional readiness, and the different adaptive capacity of people. This professional task therefore involves two distinct responsibilities. The fact is that newsrooms will have to define what they want to make visible and how they shape the definition of the public(s) to make them understand how climate risks relate to people, who is responsible, and what can be done. This dual responsibility is particularly important in Pakistan. Environmental issues such as floods, heatwaves, urban smog, glacial hazards, drought, water scarcity and coastal pressures are not just add-ons to environmental issues. These impact public health, agriculture, mobility, infrastructure, energy, livelihoods and allocation of state resources. The size of the climate-related hazards, which can turn into development and governance crises, has become clear with the floods of 2022, which resulted in massive social, economic, and infrastructural losses (World Bank, [2022](#)). The National Adaptation Plan also considers the issue of climate resilience as a trans-sectoral issue which has to be addressed, keeping in view the factors related to Water, Agriculture, Cities, Disaster Management, Human Capital and Vulnerable Groups (Government of Pakistan, [2023](#)).

The existing Pakistani scholarship has laid down a number of restrictions for the problem of climate reporting through media. A study on environmental journalism by Sharif and Medvecky ([2018](#)) finds that journalists' news agenda in the country is politicized, their specialization is at a low level, they are unable to access scientific information, they are poorly resourced, and they do not get sufficient financial compensation for continuing environmental reporting. Climate journalists also operate in a climate of misinformation, and fact-checking is still highly challenging in their newsrooms due to normal newsroom challenges (Ejaz et al., [2022](#)).

Content based analysis also reveals that climate coverage in Pakistan continues to be heavily politicized and oriented towards governance issues

(Ejaz et al., [2023](#)), largely based on official and elite sources (Khuhro et al., [2020](#)) and has low levels of climate justice advocacy engagement (Kamboh & Ittefaq, [2023](#)). These types of studies pinpoint the professional environment, but they are not comprehensive in linking ecological consciousness with the internal structure of the narrative in the mainstream media about climate. To fill this void, this article considers two purposely confined questions. The first question examines the extent to which there is a difference in reporting of the stories from five key ecological risk clusters of Pakistani Climate. The second analyzes the structure of the 1,410 cases of the story bearers in each of the four framing functions. It does not view all coded variables that are discussed in the news as individual contributions, but rather focuses on the relationship that is the most significant for practice: whether the risks made causally intelligible, publicly accountable and actionable?

Literature Review

Climate change is an issue about which many of the processes can't be directly observed and which is known only by scientific, institutional, and mediated accounts (Schäfer, [2015](#)), and for this reason, is often referred to as an unobtrusive issue. Public interpretation of climate risks necessitates a connection between the extreme events and the longer-term processes, although this is not always obvious when the climate risks are extreme. Media coverage is thus not an unbiased reflection of the objective risk and nor is it a simple indicator of the importance of the public. It is a product of the process of selection, sourcing, timing, visibility, and construction of the narratives. Cross-national research shows that media attention to climate change tends to emerge out as event-sensitive, often rising around political, scientific, and societal events such as climate summits, major policy decisions, scientific controversies, and public protests (Hase et al., [2021](#); Schäfer, [2015](#)). Rapidly increasing coverage can be caused by major disasters, climate summits, political announcements and conflicts, whereas it is more challenging to sustain coverage for slower changes in the environment (Boykoff, [2011](#); Hase et al., [2021](#); Painter, [2013](#)). For instance, Davidson et al. ([2019](#)) showed that high levels of coverage of forest fires did not necessarily lead to a high level of linkage to climate change. Reporting a disaster does not necessarily involve explaining its connection to climate change, as these represent two distinct aspects of environmental journalism. Consequently, a news event with significant environmental

consequences may receive extensive coverage without examining its underlying systemic causes or connections to climate change.

The Social Amplification of Risk Framework can help readers understand why this is the case. Kaspersen et al. (1988) describes communication institutions as amplification stations that may increase, modify, or diminish the risk messages. This process is further shaped by news media who choose specific hazards, interpretive cues, and frame news accounts which circulate through audience and institutional evaluations of the seriousness of the hazard. Media coverage may amplify the perceived severity of a risk when it involves dramatic events or visually striking consequences, while risks that develop gradually, affect geographically dispersed areas, or require complex technical explanations may receive less attention or be perceived as less serious. For climate journalism, that means the newsworthiness of a hazard and its societal impacts could be different. That gap may be stark for journalism in the Global South. The newsroom seems to be under intense pressure to produce urgently required content, while operating with a few specialists at best and lacking a robust capacity for dealing with climate risks, which are compounded by inequalities in poverty, infrastructure, state capacity and livelihood dependence (Ejaz et al., 2022). Comparative analysis reveals that climate change is often a prominent theme in the media in the Global South, although there are still a number of differences in terms of issue attention and thematic emphasis across national media systems (Hase et al., 2021). Adaptation and mitigation framing are also different based on source structures, and country specific political contexts in carbon-locked developing countries (Günay et al., 2021). These results serve as a warning that climate vulnerability does not necessarily lead to proportional and/or constant coverage.

The media exercises influence through two distinct processes: agenda-setting and framing. In climate reporting, the distinction between these processes is more significant than it may initially appear. Scheufele and Tewksbury (2007) draw a distinction between agenda-setting and framing: The former asks whether an issue makes it to the public agenda; the latter asks how an issue is framed once it is on the agenda. In this sense, framing is not something that happens while reporting; instead, it is a job routine and a way of structuring and organizing the content through the process of selection, emphasis, exclusion, and elaboration, in such a way that a problem is presented to the audience before the audience independently

considers how the problem should be understood (Ahchong & Dodds, [2012](#)). Although the general case for agenda-setting is a bit dated, and for communication research as a whole, rather consensual, the research of McCombs and Shaw ([1972](#)) on agenda-setting in the 1968 U.S. presidential campaign was predictive of the issues that were perceived as important by the public, and with remarkable consistency, little has superseded this basic finding over the following decades although subsequent research has attempted to refine it.

Framing operates along a different dimension from agenda-setting, focusing on how an issue is interpreted rather than how frequently or prominently it appears in media coverage. Framing is when a topic is already available in an audience's memory because it is connected to existing values and schemas, whereas agenda-setting is when a topic is easily retrieved from memory because of the repeated exposure (Scheufele & Tewksbury, [2007](#)). In the case of climate coverage, it is not necessarily proof of good journalism. In the case of climate coverage, more is not necessarily better. Canadian print media coverage has been studied since the late 1980s by Young and Dugas ([2011](#)), who discovered that the opposite trend was true of Canadian media coverage as the volume of climate-related news stories increased, the reporting became increasingly simplified and less connected to its scientific context. Coverage gradually shifted from explaining the scientific causes and consequences of climate change toward emphasizing routine political and business matters. Some of that drift is not random. Meribe ([2017](#)) argues that this constriction of news coverage in Nigeria is not professional practice, but political economy, as stakeholders who hold newsroom ownership stakes, as well as advertisers and editors, limit reporters' abilities to go outside the bounds of what is publishable when covering climate change news. In very different media systems, the outcome is a coverage that can be big and yet be devoid of climate change coverage entirely (as Davidson et al. ([2019](#)) have found with Alberta forest fires coverage); or a more symmetrical sourcing, in which scientists position themselves as anchors on the problem, and retreat when the issue is politicized, leaving judgment and solution to those who have a more limited interest in the outcome (as Trumbo ([1996](#)) has documented in the case of the forest fires). All this is not done by chance. A climate story can explain the problem typically by using an episodic hook, an incident or event that is shaped by a peak or crisis. However, such reporting often stops at describing the immediate event, leaving its underlying causes, responsible

actors, and potential solutions unexplored. (Ahchong & Dodds, [2012](#); Davidson et al., [2019](#); Trumbo, [1996](#)).

Entman ([1993](#)) identifies four interconnected framing functions that serve distinct purposes. Problem Definition identifies the central issue, what is at stake, and the individuals, communities, or systems affected. Causal Diagnosis examines the conditions, decisions, actors, and processes contributing to the problem. Moral Evaluation assesses responsibility, justice, negligence, vulnerability, and the ethical implications of the problem. Treatment Recommendation identifies potential solutions, including remedial actions, preparedness measures, policy interventions, mitigation strategies, adaptation efforts, and institutional responses.

In this formulation, the four functions are interconnected and are Entman's ([1993](#)) formulation. Problem Definition identifies the central issue, what is at stake, and who or what is affected. Causal Diagnosis examines the conditions, decisions, actors, and processes contributing to the problem. Moral Evaluation assesses responsibility, justice, negligence, vulnerability, and the ethical implications of the problem. Treatment Recommendation identifies potential solutions, including remedial actions, preparedness measures, policy interventions, mitigation strategies, adaptation efforts, and institutional responses. Not all of these functions will be prominent in all stories, and they will not be able to address all climate policy aspects in a single reported story or article. Systematic imbalance, at the corpus level, however, can be seen as what journalism tends to bring to the fore and what it leaves underdeveloped. Named frames, such as disaster, conflict, economics, uncertainty, morality, human interest or responsibility have been frequently catalogued through the framing research. These typologies are useful, but can be more difficult to compare if the studies are for different frame locations and/or different definitions. However, Guenther et al. ([2024](#)) contend that the potential of framing as a bridging concept between production, content, audience, and effects was not fully realized by the scholarship of climate framing. Applying the four framing functions provides a more consistent approach to analyzing media coverage by examining how news stories define problems, explain underlying causes, evaluate responsibility, and present potential solutions. Rather than posing this question as which label is applicable to the story, it poses this question as what interpretive work does the story do.

This approach is also a functional one, that is directly linked with

newsroom practice. Typically, problem definition should work very well in conjunction with regular event reporting (journalists can record temperatures, damage from flooding, disruptions to services, crop damage, or hazardous air). Causal diagnosis involves extra reporting effort, such as access to experts, scientific translation, placing the case in the historical context and reviewing the institutional choices made. Moral evaluation is even more sensitive, as it may involve issues of distributive harm, political responsibility, climate justice and whose voices are heard when making the call on the problem. Treatment recommendation requires information regarding the options for policy, adaptation, implementation, cost, feasibility, and trade-offs. It makes sense that a hierarchy would be biased towards problem definition, but it is not insignificant. The order of the function sequence has not been regarded as a formula or a "must have" for all news items. Instead, it offers a snapshot of the reporting eco-system. A breaking bulletin could well be used to present immediate harm and safety information in lieu of other information that may be of lesser importance. A well-established climate journalism beat can extend beyond breaking news by providing follow-up reports, detailed explanations, investigative stories, expert interviews, and continuous monitoring of climate-related policies. Such comprehensive coverage, however, requires dedicated resources and a sustained editorial commitment to climate reporting. In this way, sustainability of the news story is as much an attribute of the stories as it is of the newsroom itself. The cross-national evidence thus indicates that the extent to which an issue can be seen in the news and how it is interpreted within news content is important both for evaluating the quality and value of climate journalism. While the occurrence of media in the Global South is less frequent when it comes to climate change, the effects of climate change on society and humanity are more often emphasized in these media (Hase et al., [2021](#)). This distinction is particularly significant for Pakistan, where high climate exposure has an impact on the quantity and the nature of coverage, and is therefore professionally significant.

Pakistan's media landscape is characterized by the use of two major languages, commercial influences, a strong focus on political affairs, and a preference for breaking news coverage. The messages in English language newspapers are usually covered in larger print, the Urdu language newspapers appeal to a wider audience, while TV news reaches a large audience due to real-time visual content and live reportage. They are not the same but they are complementary spaces which are influential in the

publicization of climate risk. Most of the above platforms are not ranked in the present article. Rather, it looks at the ecology of attention and framing to climate change, through their collective corpus. Qualitative data reveals that in Pakistan, environmental journalists are continually constrained by four obstacles to journalism: lack of newsroom specialization, lack of access to trustworthy scientific information and data, weak media editorial priorities, and media commercial logics that favor news reporting around politics or events (Sharif & Medvecky, [2018](#)). These factors can account for how climate coverage can be reactive despite an awareness of the importance of the issue by journalists. The issue is not with the problem itself, but rather the structure. Under the terms of the “special and extraordinary” or “interesting and strange” category, a reporter on the beat might be able to see casualty lists, official statements, and dramatic video; but not attribution science, historical information, or an independent review of adaptation policy.

Structure of the source material influences interpretation. It was revealed that the news media in Pakistan was heavily dependent on the elite and official sources and little emphasis was placed on the visibility of citizens and marginalized communities in the news media (Khuhro et al., [2020](#)). In public-affairs journalism, causal diagnosis and moral evaluation are limited by going too far with reliance on official sources, especially when they are required, such as in an emergency. Effected populations can be represented as actors who are knowledgeable of policy and recovery, instead of recipients of relief; government action can be seen as announced rather than implemented. This is echoed by more recent studies. Ejaz et al. ([2023](#)) observed that over the years, Pakistani English newspapers had started more coverage of climate change, which was still heavily skewed towards politics, governance, and society. Ittefaq et al ([2023](#)) suggest climate journalism in Pakistan needs to be viewed as an ethical and deliberative practice that can make sense of complex information and involve all stakeholders. In their study on climate justice and advocacy journalism, Kamboh and Ittefaq ([2023](#)) observed that the mainstream newspapers lacked the right quality and quantity of advocacy journalism due to the magnitude of the climate injustice. Combined, these studies indicate that the lack of climate journalism is not necessarily easy to spot. Rather, it concerns how professional journalistic routines influence which climate-related issues receive attention, which sources are considered authoritative, how underlying causes are explained, and whether potential

responses are discussed. The Pakistani case is also not just representative of all developing media systems but has relevance to the Global South as a whole. It is its analysis potential that makes it valuable. It is because of this reason, that it is a place where high climate vulnerability exists, along with a variety of ecological hazards, diverse linguistic communities, and a large mainstream media sector. This combination allows an examination of whether the severity of environmental risks corresponds to the level of media attention they receive. It also helps assess whether climate-related reporting goes beyond identifying problems to addressing accountability and proposing practical solutions. The implications of the answer are relevant to other situations where disaster visibility is high, and the institution in which environmental reporting is weak.

There are two related gaps in the literature, referred to here. First, previous research on climate journalism in Pakistan has primarily focused on reporting constraints, dominant themes, information sources, and misinformation. However, limited attention has been given to how frequently climate-related stories appear across different ecological risk clusters. Previous studies have also rarely considered the total number of sampled news units, including those without climate-related coverage. This limits our understanding of differences in climate news visibility across Pakistan's five major ecological risk clusters. Second, there is not enough existing research to test whether the mainstream climate coverage sequence of the four framing functions is tested. The study was able to draw a distinction between 'visibility' in the news and 'public intelligibility' through journalism because of these gaps. This brings the core objective as to examine not only whether climate stories are present across ecological-risk clusters in Pakistan's media, but whether that coverage performs four framing functions of problem definition, causal diagnosis, moral evaluation, and treatment recommendation. This paper probes the issue with two core questions.

RQ1: What is the frequency of the selected mainstream media's climate-news stories over the ecological risk clusters in Pakistan?

RQ2: What are the ways in which the stories of climate news are framed within the four framing functions: problem definition, causal diagnosis, moral evaluation and treatment recommendation, across effective climate communication strategies?

Methodology

The analysis was done using content analysis (quantitative) to find patterns in the presence and framing of climate news. This design is suitable for the analytical goal of comparing observable characteristics across a large set of texts from among specific known categories, coding rules that are explicit and transparent, and the statistical procedures are replicable (Krippendorff, 2018; Neuendorf, 2017; Riffe et al., 2019). It was a post-positivist and deductive method, in which ecological clusters, and framing functions were pre-defined and the texts were coded for analysis of the distribution of the clusters. This was meant to be compatible with the two levels of the research questions, so two units of analysis were used. The unit for RQ1 was a newspaper edition and a bulletin for television, which had been selected through stratified random sampling. This level allows for both story-bearing and no story observations to be kept, and for valid estimates of climate-news presence. For RQ2 the unit was the climate-news story. The framing analysis was carried out only on the Story-Bearing Corpus as there is no story in the other corpora. The sampled media units in the retained corpus were 1669. The number of media units in the retained corpus was 1410 with climate news present stories. It encompassed English language newspapers (Dawn, The News), Urdu language newspapers (Jang, Nawa-i-Waqt) and TV news bulletin (Geo News and ARY News). The outlets chosen were those that present influential national mainstream mass audience television viewership with reference to their top ratings, and newspapers that have high circulation and readership by wider English and Urdu understanding communities.

The selected outlets were purposively chosen as nationally established news organisations representing Pakistan's leading English-language, Urdu-language, and television news sectors. Recent audience evidence identifies Geo News and ARY News as the two leading television news channels, while newspaper selection reflects national prominence, linguistic reach, and the availability of official circulation certification; comparable and current readership estimates are not publicly available for every selected title (Government of Pakistan, 2026; Gallup Pakistan, 2025; Freedom Network, (n.d.)). Within each study year and ecological risk window, sampling dates were designed in a stratified constructed-period design. This was not to get a sample of days that were already known to have significant climate events, but to sample "normal" coverage

opportunity over selected days. Content was analyzed for all sampled editions and bulletins that were examined to look for aspects of the climate. If there were stories in a media unit that met the story-relevance criteria in the codebook, the media unit was classified as story-bearing; if no story was found in a media unit, the media unit was retained as an Observed Zero-Coverage Case. It is important to keep zero coverage observations. They are not missing data; the edition or bulletin was observed but there was no climate coverage. This would "condition" the analysis on the previous existence of climate news, and overestimate the attention. The retained denominator thus provides better grounds for making a more valid comparison between the ecological salience and media silence. The 1,410 out of 1,669 units (84.48%) that had a story on climate change had the stories in their units; 259 (15.52%) units were zero coverage cases.

The sampling frame was broken down into 5 ecological risk clusters which were chosen for their relevance in Pakistan and their diverse characteristics presented in news, namely air pollution and winter hazards; drought and water scarcity; heatwaves and extreme temperatures; flooding and glacial outburst; and coastal vulnerabilities. The categories are grouped together because they represent conditions with similar characteristics across the seasons and/or across different ecosystems that need different reporting resources. The cluster structure is an analytic central concern of RQ1. Floods and glacial events are frequently dramatic, visually apparent, and involve deaths and displacement, emergency responses and official actions. Another type of immediate public-health and service-disruption story may be triggered by heatwaves and smogs. Drought, water scarcity, coastal vulnerability are generally more gradual, and fragmented, and rely on trend information, expert experience and regular, local reporting. It is thus possible to compare the presence of stories in these clusters, testing whether there is an even distribution of attention, or whether there is a distribution of attention according to the news affordances of some hazards.

The framing analysis was done along the lines of Entman's (1993) four functions. Problem definition identified the climate related harm, threat, disruption or public issue. Causal diagnosis was able to record explanations of physical processes, human drivers, institutional decisions, policy failures, infrastructure or other contributing conditions. Moral evaluation is the responsibility, injustice, unequal vulnerability, blame, concern for morality or evaluation of institutional behavior. Treatment recommendation was the

response that was captured for adaptation, preparedness, mitigation, regulation, recovery, policy intervention or other proposed responses. Each of the functions was coded to be visible in different climate stories across nine substantive climate-communication strategy domains for effective communication: Localized Context; Science and Explanation; Urgency and Opportunity; Countering Misinformation; Equity and Public Engagement; Solutions and Adaptation; Government and Policy Action; Finance, Loss and Damage; and Economy and Security (IPCC, [2023](#); (Government of Pakistan, [2023](#); World Bank, [2022](#); Asian Development Bank, [2021](#)). In this article these domains were not considered as further research questions. They provided a structure for coding, meaning that every framing function was evaluated not only from a scientific perspective, but also from a social, policy, justice, financial, and livelihood perspective as well, not just one 'generic framing function'. A Coded Framing Score (0-4) was given to each domain-function cell representing the highest coded representation of the domain function under the operational rubric. For each of the four functions, scores for the nine domains were then totaled to create a Framing-Function Score (0 to 36) for each function. High scores reflect a more complete coding of that function in the range of the defined scheme, and should not be taken as a measure of the quality of the journalism, or of the impact on audiences or of the influence on policy.

Results

The article has a single core argument: ecological selectivity and framing imbalance contribute to the creation of a crisis visibility, but not in a consistent and comprehensive way. Coverage is more likely to be generated from hazards that provide strong visual and/or temporal news cues. After stories emerge, news texts are more specific in their definition of harm than their assessment of responsibility or in determining their response.

RQ1 was answered using frequencies, Story-Presence Rates, and Pearson's chi-square test of independence comparing the 5 ecological clusters on story presence. It was reported that Cramér's V was a measure of the size of association. Both coverage and non-coverage are substantively meaningful for this question and the entire retained sample ($N = 1,669$) was used to conduct the analysis. The Story-Bearing Corpus ($N = 1,410$) was used for answering RQ2. Since the four Framing-Function Scores were ordinal measures that were based on the same stories, all medians were used to represent typical coded representations and the Friedman test was used

to determine overall differences. A presence-based Cochran's Q test was used as a supplementary test to determine if there was a difference between the four functions in their appearance. These are non-parametric procedures which do not make any assumption that the underlying 0–4 coding scale is normal or that the intervals between the codes are equal.

Climate News in the Different Ecological Risk Clusters

A total of 1,410 units of the sample had stories and 259 of those units were observed with zero coverage. The overall presence of climate-news was high (84.48%) and also not evenly distributed, across ecological risk clusters. Both the number of units observed and the Story-Presence Rate within each cluster are shown in Table 1, to distinguish between ecological risk clusters with a large number of observed units but relatively infrequent climate-related stories and those with fewer observed units but a higher frequency of climate-related coverage.

Table 1

Climate-News Presence across Ecological Risk Clusters (N = 1,669)

Ecological risk cluster	Retained media units (n)	Reported climate stories (n)	Story-presence rate (%)	Observed zero-coverage cases (n)
Air Pollution and Winter Hazards	333	297	89.19	36
Drought and Water Scarcity	327	242	74.01	85
Heatwaves and Extreme Temperatures	340	286	84.12	54
Flooding and Glacial Outburst	333	326	97.90	7
Coastal Vulnerabilities	336	259	77.08	77
Total	1,669	1,410	84.48	259

Note. Story-presence rates use the retained cases within each ecological cluster as the denominator. Observed zero-coverage cases are valid sampled editions or bulletins in which no eligible climate story was found.

The association between ecological cluster and story presence was statistically significant. The chi-square test indicated that there was a significant relationship between ecological cluster and the presence of the story, $\chi^2(4, N = 1,669) = 92.782, p < .001$, Cramér's V = .236. The effect

size suggests a significant (modest) trend that is not a random fluctuation. Both the most covered and the highest Story-Presence Rate (326 of 333 sampled units, or 97.90%) were found in the most consistently covered cluster – Flooding and Glacial Outburst. Air Pollution and Winter Hazards were next at 89.19%, and Heatwaves and Extreme Temperatures took up the third place at 84.12%. The clusters that were less conspicuous and/or slower to develop were not covered as consistently. Coastal Vulnerabilities ranked second in climate stories produced with 77.08%, and Drought and Water Scarcity had the lowest rate with 74.01% of the sampled units reporting them. The difference between Flooding and Glacial Outburst, and Drought and Water Scarcity was 23.89 percentage point. In other words, there were 85 observations of drought/water-scarcity were zero coverage, while only seven observations of flooding/glacial were zero coverage. An ecological visibility hierarchy, instead of an even distribution of climate-news production, therefore answers RQ1.

Framing Across the Four Functions

Regarding findings for the research question-02, 1,410 climate-news stories were analysed using the framing approach. Within the Story-Bearing Corpus, the four framing functions differed significantly, Friedman $\chi^2(3, N = 1,410) = 2036.784$, $p < .001$, Kendall's $W = .48$, with Median Coded Scores of 16 (Problem Definition), 15 (Causal Diagnosis), 13 (Treatment Recommendation), and 10 (Moral Evaluation). Even at the level of bare presence, the four functions differed, Cochran's $Q(3) = 420.287$, $p < .001$, confirming that the asymmetry is not an artifact of the graded coding. The results demonstrate that the functional hierarchy not only can be seen in the presence or absence of a function but also in the extent to which each framing function is present and the level of detail with which it is addressed.

It was found that problem definition had the highest score in terms of median as $Md = 16$. So, the main stream media of Pakistan (MSM) was the most consistent in identifying the climate hazards, impacts, climate affected areas, and crisis situation. Causal diagnosis came in second ($Md = 15$), showing that there was no lack of causal diagnosis in the corpus. However, taken in conjunction with the broader function hierarchy (explanation present, problem visibility dominant) the one-point median difference is a substantive one. The decline for treatment recommendation ($Md = 13$) and the moral evaluation ($Md = 10$) became more pronounced. The number of response pathways (adaptation, preparedness, institutional action,

regulation, mitigation, and recovery) was less well represented than were problems and causes. Moral evaluation was the weakest function that relates to responsibility, unequal exposure, injustice, negligence and/or ethical evaluation. The answer to RQ2 is thus an uneven framing sequence, with the 'what is wrong' aspect of the story being most strongly framed, the 'why' being somewhat less strongly framed, and the 'who is responsible? / what should be done?' being less strongly framed.

Table 2

Median Framing-Function Scores in the Story-Bearing Corpus (N = 1,410)

Framing function	Possible score range	Median framing score	Corpus-level interpretation
Problem Definition	0–36	16	Climate risks are most strongly constructed as identifiable harms, disruptions, and public problems.
Causal Diagnosis	0–36	15	Causes and drivers are widely present but slightly less developed than problem visibility.
Treatment Recommendation	0–36	13	Preparedness, adaptation, and policy response are present, but less consistently elaborated.
Moral Evaluation	0–36	10	Responsibility, injustice, unequal vulnerability, and ethical assessment are least developed.

Note. Each function score sums nine ordinal domain scores. Higher values indicate more comprehensive coded representation within the operational scheme, not direct audience effect or an absolute judgment of journalistic quality.

Discussion

Ecological Hierarchies of Climate-News Visibility

Journalism is part of the general policy and societal structure of climate risk. So, its attention is not only the way it communicates, but also the

structure it imparts to the attention it gives, which may influence what risks come to light, to be politically debated, and to be institutionalized for review. However, this research identifies that climate hazards are not on the news agenda equally. Floods and glacial outburst events emerge out as all good producers of dramatic images, loss of life, displacement, infrastructure damage, magnifying the presence of officials and provide very clear temporal markers, which fit well with traditional news values. Fear-based and catastrophic climate imagery may attract attention, but it rarely sustains meaningful engagement, unless reporting also provides credible agency, efficacy, and pathways for response (O'Neill & Nicholson-Cole, [2009](#)). Drought and water scarcity, on the other hand, happen in a way that is more diffuse: manifesting in decreasing groundwater levels and declining agricultural conditions, food insecurity, and growing stress on livelihoods. These processes are not often associated with a single breaking-news moment, and are therefore more challenging to maintain in event-driven news routines. This produces an "ecological hierarchy of visibility," in which acute and spectacular hazards become more visible while slow-onset and structurally embedded hazards are comparatively faded. The result is an "ecological hierarchy of visibility," in which slow onset and structurally embedded hazards are "compromised", relative to acute and spectacular hazards. This is important for the profession: a recurring under-attention does not equate with low consequence; it means that long term risks can be kept off public view.

These results confirm this. As evident from the overall Story-Presence Rate of 84.48% on the sampled mainstream media of Pakistan, climate change was not marginal in the sampled mainstream media as it has received significant attention within the selected ecological windows. But it did not occur evenly. Flooding and Glacial Outburst had the highest amount of story presence, while Drought and Water Scarcity, and Coastal Vulnerabilities had more story presence but comparatively higher zero-coverage cases. It was thus visible, but visible in a gradation, the hierarchy was determined by the degree of newsworthiness of the hazards. This agrees with the amplification and attenuation mechanisms found by Kasperson et al. ([1988](#)), and is consistent with Davidson et al. ([2019](#)) finding that thorough disaster reporting doesn't always lead to long-term climate attribution and structural explanation. Moreover, visibility is just the first threshold of the professional world! The study distinguishes between journalism that merely reports climate-related events and journalism that explains their underlying

causes, assesses responsibility, and explores potential solutions using the four framing functions outlined by Entman (1993): Problem Definition, Causal Diagnosis, Moral Evaluation, and Treatment Recommendation. Establishing links between extreme events and climate change, providing historical context, examining relevant policies, identifying funding sources, evaluating policy implementation, monitoring recovery efforts, and assessing adaptation measures are essential components of crisis reporting that contribute to more comprehensive and climate-focused journalism. Otherwise, visibility of these practices is tied to the peaks and troughs of the event cycle and institutional conditions that create climate harm and are under-researched.

First, hazards are given a priority that is crisis orientated, or rather crisis value-adding. Second, when the story occurs, its representation is strongest in Problem Definition, and gets weaker in Treatment Recommendation and Moral Evaluation. This does not suggest that Pakistani media outlets neglect climate change; rather, it indicates that their coverage focuses more on identifying climate-related problems than on evaluating responsibility and proposing solutions. The presence of ecological selective and incomplete nature of climate visibility is the core finding. In this context, the challenge for newsrooms in critical contexts is not just to publish more climate story, it should be to create an entire chain of climate story production: Problem, Cause, Responsibility and Response. This is a practice problem and not descriptive curiosity and ecological selectivity. Recurring visibility of some hazards and the lack of visibility of others when they do not happen until conditions are catastrophic, can limit the public's understanding of what actually a climate risk is, how these risks differ across ecological clusters, their relative severity, and their consequences for communities vulnerable to climate change. The risks that develop slowly can be considered as a normal occurrence of the season, as local shortage or as a regular development failure. On the other hand, and more surprisingly, a disaster with a high visibility can be considered as an exogenic shock, far removed from a long and growing vulnerability. As (Davidson et al., 2019) have pointed out that extreme events attract attention, but without causal attribution and contextual explanation, their climate significance remains publicly visible yet poorly understood. Both patterns have a negative effect on continuity: the first (when one is under-attending) and the second (when one is over-attending and not providing follow up structure).

A Framing Hierarchy from Recognition to Accountability

The second discovery highlights what takes place within the climate stories. Problem Definition is the most powerful function, followed by Causal Diagnosis, Treatment Recommendation, and Moral Evaluation is least powerful. This hierarchy indicates that Pakistani mainstream journalism is not only aware of climate related harms, but occasionally even offers a causal understanding of harms. However, reporting seems to be less consistent in moving from problem identification to responsibility and response. Although Problem Definition is necessary, but insufficient without causal explanation, accountability, and credible treatment recommendations. Climate reporting should clearly identify the communities affected by climate-related hazards, the systems and infrastructure at risk, and the geographical areas where these impacts occur. In a country where climate events are recurring, it is not easy to just make a superficial record of damage. The restriction only comes into play at problem description. If a flood is perceived mainly as a rise in water levels, loss of life and relief, it can be perceived as serious. However, such reporting may overlook how the intensity of extreme precipitation interacts with land use, drainage systems, infrastructure, settlement patterns, and governance practices to influence the severity of flooding and its consequences. Likewise, before considering the impacts of urban design, labour exposure, access to energy supplies, public-health preparedness and adaptation, and changing climatic baseline, it is possible to report on a heat wave as exceptional weather.

Causal Diagnosis score is therefore, a significant qualification as the score is relatively high. Not all of the Pakistani media is lacking in explanation. The causes and drivers are widely distributed and have a median that is just slightly below that of Problem Definition. But, as with most issues, it is possible to have good explanation, or bad. Still, explanation can be good or bad in both quality and size. Systemic causes such as emissions, policy design, institutional fragmentation, inequality or historical vulnerability are harder to identify than immediate causes, like blocked drains, failure of crops, or administrative delay. There must be more than one attribute to a story if it is to be a good causal story. Treatment Recommendation is in a less favorable position. This is important because climate change communication that focuses on threat, but does not have a viable path, can lead to distance, powerlessness, or disengagement (Moser,

[2016](#); O'Neill & Nicholson-Cole, [2009](#)). Aside from journalists not endorsing a policy, framing treatments are not necessary. It forces them to recognize, evaluate, and consider potential responses (from whom, based on what, who pays for it, what are the bargains, and what were previous commitments, and were they followed up?). It is an essential part of the role of a journalist in the role of 'watchdog' particularly in circumstances where adaptation plans and promises of disaster recovery involve significant public resources. The most serious lack of public accountability is Moral Evaluation, which is the weakest as per findings. The impact of climate harm is not equal and does not affect everyone equally, as a function of class, gender, region, occupation, infrastructure access, etc. Reporting can make this inequality visible without becoming polemical. It can also examine why some communities continue to occupy high-risk areas, whose livelihoods are protected, who receives compensation for losses, how relief is distributed, and whether institutional neglect has increased their exposure to climate-related hazards. Ethical considerations are not simply an afterthought or a 'feel good' component that is added to the factual reporting of information, but one way journalism considers the legitimacy of public decisions (Ittefaq et al., [2023](#)).

The low Moral Evaluation score is also aligned with evidence which shows that in Pakistan the dominant sources of information on climate are elite and official sources (Khuhro et al., [2020](#)). Official sourcing offers authoritative information, but it can also help to set the moral guidelines for a story. If the disproportionate suffering of affected communities is portrayed primarily as victims and the disproportionate role of the official as a responder, the text might gloss over agency, responsibility, and/or contestation. Incorporating a wider range of sources, including local communities, independent experts, civil society organizations, labour representatives, farmers, women, and displaced populations, would allow these groups to contribute their perspectives on climate risks rather than being portrayed solely as victims of their impacts.

The Coupled Pattern: Crisis Visibility without Interpretive Completion

Focusing on ecological hazards or emphasizing certain framing functions is not necessarily problematic on its own. However, when these patterns occur together, they can reinforce each other, resulting in coverage that highlights visible climate-related impacts while giving less attention to their underlying causes, accountability, and possible solutions. They

mutually reinforce each other. The hazards that most easily fit into the Problem Definition are: visible damage to property, disruption, loss of life and urgency. The functions that need continuity (causal layering, responsibility, policy evaluation and response monitoring) are the same functions that are less likely to be well suited to short event cycles. This two-way coupling is characterized by beginnings of crisis visibility but incomplete interpretations. This does not mean that every story has to include all 4 functions, at their peak. Nor does it take for granted that the institutional context of the journalism is under the control of journalists. The findings highlight an imbalance in mainstream media coverage, which effectively raises public awareness of the harmful effects of climate change but is less effective in identifying responsible actors, holding them accountable, and communicating practical measures to address climate-related risks. The study clarifies the previous work carried out in Pakistan. Sharif and Medvecky (2018) reported on the challenges of resources, expertise and editorial resources as provided by journalists. Ejaz et al. (2022) were able to uncover misinformation and fact checking pressures. In line with this, the themes of politics and governance continued to be the leading themes in the research of Ejaz et al. (2023). The present content analysis illustrates ways in which this happens in news texts: clusters of interest are focused on those risks, which are suited to the context of crisis, and the framing sequence narrows as it progresses to moral and treatment functions.

Second, it also plays a part in broader climate-framing studies by providing linkage between visibility and practice via the functions. Guenther et al. (2024) write that there is a need for a greater conceptual integration within climate-framing studies. There are problems of comparability that are not addressed by a function-based approach but it is a parsimonious diagnostic. It poses the question of whether journalism identifies, explains, evaluates, and responds; activities that are understandable in both media and ecological issues. Named frame typologies can be very useful for comparative Global South studies, as they are not straightforward to move across political and cultural settings.

Implications for Journalism Practice

The findings point toward a newsroom strategy organized around continuity rather than volume. Coverage may benefit less from a greater number of stories than from editorial routines that allow the framing

sequence to complete itself over time, though a larger presence of stories remains useful in the clusters that are currently under-covered. The point is not that every breaking report should carry a full policy analysis; that expectation would be neither realistic nor desirable. It is, rather, that coverage may be planned so that explanation, accountability, and response accrue across a body of reporting rather than being demanded of any single item.

A first implication concerns the structure of beats. Where reporting is triggered mainly by sudden disaster, slow-onset risk tends to fall outside the newsroom's attention. Drought, groundwater decline, coastal change, and chronic heat may warrant scheduled reporting triggers of their own, since they rarely announce themselves through a single dramatic event. Seasonal data releases, reservoir levels, crop cycles, public-health indicators, adaptation budgets, and local planning decisions may serve as recurring points of entry, and a calendar-based approach may reduce the dependence of climate coverage on spectacle.

A second implication concerns causal diagnosis, which may be strengthened if it is treated as a routine matter of editing rather than an occasional addition. Reporters may benefit from ready access to expert directories, from simple conventions for attribution, and from the capacity to distinguish weather from climate. Sourcing that reaches beyond the major metropolitan centers is likely to matter here: universities, meteorological institutions, disaster-management specialists, and holders of local knowledge, each offer a different causal layer. Newsroom translation of climate information may also be improved through regional contextualization, interactivity, and accessibility, as Pathak et al. ([2021](#)) suggest.

A third implication concerns treatment reporting, which may shift from announcement toward verification. Much climate journalism records that a policy, relief program, adaptation project, or early-warning system has been announced; the more consequential question is whether it was funded, built, maintained, and used by those it was meant to serve. Follow-up reporting on recovery spending, heat-action plans, drainage upgrades, water governance, crop adaptation, coastal protection, and relocation commitments may move Treatment Recommendation from the stage of official aspiration into the field of journalistic verification.

A fourth implication concerns moral evaluation, which may rest on evidence rather than rhetoric and may draw on more than a single criterion. Responsibility may be examined through timelines and budgets, regulatory obligations, prior warnings, and distributional outcomes. Climate-justice reporting may need to identify who bears the losses, whose knowledge is admitted, and for whom exposure to climate risk has come to seem ordinary. Consistent with the present findings, the advocacy and justice dimensions appear to remain underdeveloped in Global South settings, as Kamboh and Ittefaq (2023) observe.

Finally, the four framing functions may be more useful to editors as a portfolio than as a checklist applied uniformly to every story. A breaking report may reasonably prioritize Problem Definition; an explainer may develop Causal Diagnosis; an investigation may carry Moral Evaluation; a solutions or policy-accountability piece may advance Treatment Recommendation. The professional aim, on this reading, is a movement of framing across the coverage cycle rather than within each article. Such sequencing responds to three realities of newsroom work at once: it prevents coverage from ending at the moment of peak drama, it respects the constraints under which reporters operate, and it acknowledges that framing takes time to build.

Conclusion

The article focused on two key aspects of climate journalism in Pakistan; the extent of climate risks that are covered in news across five key ecological clusters, and the framing of climate stories once they get into the news. All of the results form a definite trend. The presence of Climate-News is quite high, but not evenly distributed. Flooding and Glacial Outburst had the highest Story-Presence Rate, and Coastal Vulnerabilities, and Drought and Water Scarcity were not given as much attention. In the Story-Bearing Corpus, the former two elements of the task, Problem Definition and Causal Diagnosis, were more highly developed than the latter two (Treatment Recommendation and especially Moral Evaluation). The above results are interpreted separately to produce a visibility hierarchy and a framing hierarchy. Together, they show how good the mainstream media in Pakistan is in recognizing the issue of climate crisis, but not in taking ownership or taking action about it. This does not indicate that the climate news altogether dies or it is a sign of the failure of journalists. It illustrates the patterned incompleteness in coverage which seems to arise from professional

routines, risk characteristics, access to sources and editorial resources as per prior scholarship. The implication in journalism practice is very solid. The number of stories should not be the sole measure of climate reporting in high vulnerability settings, and climate disaster storylines should not exist. A higher practice standard would question newsrooms' spread of focus over both "slow" and "sudden" threats, and how news outputs over time identify problems, pinpoint causes, assess accountability and hold people to account. Moving from crisis reporting to explaining crises and examining accountability does not mean abandoning coverage of immediate events. Instead, it involves expanding such coverage to provide continuous explanations of underlying causes, assess responsibility, and hold relevant institutions accountable.

Limitations and Future Research

The study examines some of the mainstream media and cannot be representative of Pakistan's communication ecology. Other media outlets in the region such as community media, digital-native journalism, social, and interpersonal, may have different ways of organizing climate risk. The design also does not consider the reception of the audience, the intention of the journalist or the impact of the policy on the audience. Audiences' learning, trust and action on the coverage cannot be assumed from the higher Framing-Function Scores.

The ecological clusters used in this study simplify complex and overlapping environmental risks by grouping them into distinct categories for analytical purposes. Floods can relate to other aspects of climate change, such as heat, water management, glacial change, and coastal conditions, but not air pollution; climate change can take place across multiple environmental domains; and stories can span across more than one environmental domain. The clusters are thus analytical, rather than ecological isolations. There is a need for future research into function patterns within each cluster, comparison across platforms and language, and a correlation of content with interviews in the newsroom and with audience research. Most importantly, the results of the intercoder-reliability test(s) must be added prior to submission in order to be able to fully evaluate the interpretive coding.

Author Contributions

Shahla Riaz: and **Farrukh Shahzad:** contributed to the conceptualization, research design, methodology, literature review, investigation, analysis and interpretation of media content,

development of the analytical framework, and preparation of the manuscript. Both authors contributed to writing—original draft and writing—review and editing. Both authors read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

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