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Climate Change and Media Policy Nexus: Opportunities, Challenges, and Policy Recommendations Case Study of Pakistan

Tanveer Nasir
PhD Scholar, Department of Media Studies, Bahria University Islamabad
Email: tanveernasirkhattak@gmail.com https://orcid.org/0009-0000-7513-8643

Sultan Mahmood
Professor, Department of Pakistan Studies, Abbottabad University of Science & Technology, Abbottabad, Pakistan (AUST). Email: wafa692@yahoo.com

Kashmala Ali
Benazir Bhutto Women University Peshawar Email: kashmalaali75@gmail.com

Muhammad Abubakar
Ph.D. Scholar, College of Earth and Environmental Science, University of the Punjab, Lahore, Pakistan. Email: muhammadabubakar704@gmail.com

Abstract
Climate change is an immediate global concern, and Pakistan is among the most vulnerable countries to its effects. Media now occupies a prime position in influencing public opinion, policy making, and awareness rising on climate issues. Nevertheless, the reciprocal and dynamic nexus of media and policy making remains under research within the Pakistani setting. The goal of this research is to explore the link between media coverage and climate change policy in Pakistan focusing on challenges and opportunities created by the two. Three specific goals, three questions of research and three hypotheses inform the research, test its hypotheses to assess the effectiveness and role playing by the media in forming climate policies. A quantitative study design is utilizing the survey technique to obtain access to a population of climate change researchers, activists, and professionals. 100 individuals are purposely sample in order to select respondents with relevant expertise. Data is gathered with a structured questionnaire and is presented using descriptive statistics and presented as pie charts to enable easy presentation of trends and respondents' perceptions. Early observations are that while the media has contributed to sensitizing the public, its direct effect on policy reforms is still constrained by institutional, political, and communication gaps. The participants underscored the need for evidence based reporting and enhanced collaboration between media institutions and policy stakeholders. The study concludes that enhanced strategic use of media can assist climate governance in Pakistan by bridging the gap between scientific debate, public awareness, and policy response. Policy suggestions are to enhance journalist training on climate issues, develop fact-based media campaigns, and integrate media actors into national climate policy frameworks.

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Keywords: Climate Change, Media-Policy, Challenges, Opportunities, Policy Recommendations

Introduction

Climate change has become one of the most pressing global issues of the modern era, threatening ecosystems, economies, and human health on a massive scale. According to the Intergovernmental Panel on Climate Change (IPCC, 2014), the crisis is largely driven by anthropogenic factors such as burning fossil fuels, deforestation, and greenhouse gas emissions. These activities have produced visible impacts, including rising sea levels, glacial retreat, and the growing frequency of extreme weather events (IPCC, 2014). Climate change is now one of the most severe global challenges of the 21st century, impacting ecosystems, economies, and societies worldwide. Pakistan, with its low carbon emissions, ranks among the world's most climate risk prone countries due to its geographical location, weak infrastructure, and limited adaptive capacity. Increasing temperatures, frozen melts, droughts, floods, and unstable weather patterns have turned into common events, posing extremely serious threats to human health, food security, water resources, and economic stability. By the same token, the function of media as an instrument to transport climate change has become even more important. Media is not simply an information supplier but a powerful agent with the ability to shape opinion, mobilize people, and indeed drive policy modifications. In countries like Pakistan, where literacy on climate matters is poor and policy enactment weak, the media has a unique role in bridging science and policy action. The ability of the media to influence policy, however, is dependent on the accuracy, consistency, and shaping of news about climate change. While there is growing acknowledgment of this concern, there has been a deficiency literature that investigates the contribution of Pakistani media to raising climate change awareness and policy debates. This study seeks to examine the media policy interface, the overlap between the framing of climate change in the media and its impact on policy constructs. Specifically, it attempts to determine the opinions of climate change researchers, activists, and experts regarding the role of media in policy making and reform.
By employing a quantitative survey tool and a sample size of 100 concerned parties, this study presents a scrutiny of the difficulties and innate potential in the adoption of media as a tool of climate advocacy.

Background

Climate change is a current threat; it is a pressing and increasing crisis with profound implications for ecological integrity, economic development, and human health. Pakistan is already witnessing the impacts of climate change in the shape of regular floods, droughts, heat waves, and glacial melting in the north. The 2022 floods that forced millions to flee their homes and inundated agriculture 2022 floods that forced millions to flee their homes and inundated agricultural fields are a stark reminder of the vulnerability of the country. Even as the government formulates national policies such as the Pakistan Climate Change Policy (PCCP) and is inking global policy agreements such as the Paris Accord, implementation of climate adaptation and mitigation efforts continues to be weak and patchy. The fields are a harsh reminder of the vulnerability of the country. Even as the government established national policies such as the Pakistan Climate Change

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Policy (PCCP) and is signing international policy agreements such as the Paris Accord, its execution of climate adaptation and mitigation measures remained shaky and disjointed. In democracies and information societies, the media play a significant role as an intermediary between science knowledge, public opinion, and policy making. In Pakistan, where environmental literacy is low and climate change is low on the agenda of policy making circles, media outlets can be catalysts for change. But this potential is too frequently overcome by barriers such as sensationalism, lack of scientific expertise among journalists, political agendas, and minimal consultation with climate specialists. Overseas research has proven that strategic and responsible reporting by the media can enhance public awareness, influence government agendas, and assist in developing more efficient environmental policies. This research essay explores the media policy of Pakistan, how media influences climate change policy, what restrictions curtail its strength, and what is reformed. In enrolling climate experts, scholars, and campaigners, the research hopes to offer evidence based findings that can strengthen the divide between climate communication and policy that makes a difference.

Problem Statement

Despite the growing pace of climate change and its felt impact on Pakistan, design and enforcement of effective climate policies remain less than optimal. While the media has been widely praised as a great tool of sensitization and public opinion making, its utility in policy making for the environment in Pakistan remains poorly grasped and underutilized. There is an apparent disconnect between climate change coverage by the media and meaningful engagement with policymakers, weakening the momentum in moving forward with sustainable environmental reforms. Besides, existing media narratives in Pakistan are typically not scientifically deep, uniform, or strategically inclined in the long term. Reporters coverage is event driven, reactive, and occasionally politically or business oriented, which inhibits its ability to generate repeated policy discussion or public activation. On that account, despite climate experts and activists agitating for reform, the media policy nexus is still underdeveloped and weak. This research endeavors to analyze the challenges and opportunities at the media policy interface related to climate change in Pakistan. The study fills a critical void by utilizing empirical evidence to examine how the media can enhance supporting climate policy change in Pakistan. Despite growing numbers of foreign studies recognizing the media's contribution to climate change communication and policy advocacy, fewer empirical research articles are performing within the specific socio political context of Pakistan. Previous research in Pakistan is mostly focused on either public perceptions of climate change or issues with policy implementation but rarely addressing media discourses' influence on policy construction. In addition, the contribution of artificial intelligence (AI) towards increasing media effectiveness, precision, and coverage in climate reporting are not widely explored in the Pakistani context. There is also a lack of adequate analysis of how media professionals engage with climate scientists, policymakers, and civil society actors, and how such engagement affects environmental governance. In particular, no large scale quantitative survey has been designed to assess attitudes of climate practitioners, activists, and scholars on the media potential, boundaries, and effectiveness for framing climate policy. This study fills these gaps by studying the media policy nexus based on a quantitative survey of

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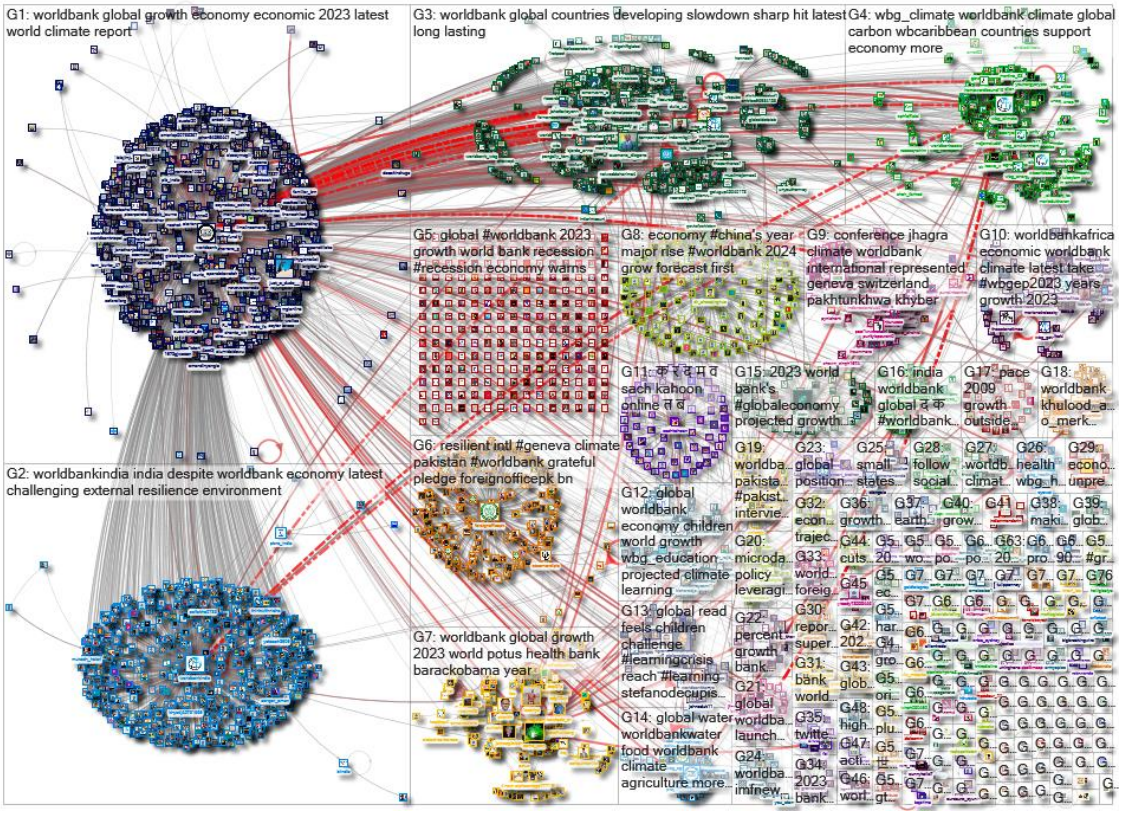
DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 3 No. 5 (May) (2025)

stakeholders, and also making policy recommendations based on the Pakistan media and governance reality.



(Worldbank, 2023)

The graph represents a network of 4,329 X users whose recent tweets contained "Worldbank (environment OR climate OR warming OR ecological OR planet OR global)", or who were replied to, mentioned, retweeted or quoted in those tweets, taken from a data set limited to a maximum of 5,000 tweets, tweeted between 3/26/2006 12:00:00 AM and 1/15/2023 5:00:35 PM. The network was obtained from Twitter on Monday, 16 January 2023 at 18:33 UTC. The tweets in the network were tweeted over the 2776-day, 4-hour, 44-minute period from Wednesday, 10 June 2015 at 20:10 UTC to Monday, 16 January 2023 at 00:55 UTC. There is an edge for each "replies-to" relationship in a tweet, an edge for each "mentions" relationship in a tweet, an edge for each "retweet" relationship in a tweet, an edge for each "quote" relationship in a tweet, an edge for each "mention in retweet" relationship in a tweet, an edge for each "mention in reply-to" relationship in a tweet, an edge for each "mention in quote" relationship in a tweet, an edge for each "mention in quote reply-to" relationship in a tweet, and a self-loop edge for each tweet that is not from above. The graph is directed, The graph's vertices were grouped by cluster using the Clauset-Newman-Moore cluster algorithm. The graph was laid out using the Harel-Koren Fast Multiscale layout algorithm. (NodeXL Graph Gallery)

Research Objectives

1. To assess the role of media in the formulation of climate change policies in Pakistan by examining the role played by media coverage on public opinion and policymakers' choices in the context of climate matters.(Objective to Hypothesis)

2. To examine the opportunities and challenges created by the media for the

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DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 3 No. 5 (May) (2025)

establishment of successful climate change policies in Pakistan that focus on scientific precision, political power, and public media interactions.
3. To create actionable policy recommendations on how to enhance the contribution of the media to climate change governance, for instance, enhancing media reporting and promoting collaboration among climate experts, media professionals, and policymakers. (Objective to Hypothesize be tested for finding)

Research Questions

1. How does public awareness and climate change policy making in Pakistan respond to media coverage of climate change?
2. What are the key challenges for the media in covering climate change effectively and influencing climate policy reforms in Pakistan?
3. What are the prospects for further strengthening the alliance between media, climate scientists, and policymakers in order to make climate change communication and policy-making more effective in Pakistan?

Significance of the Study

This research is truly of critical importance to various stakeholders in Pakistan such as policymakers, media practitioners, climate activists, and scholars. This research results provide insightful information to the use of media strategy in designing climate policies. Policymakers know from the research strategies of the media in securing public support for climate change and creating support for urgent action on climate issues. This research highlights loopholes and hindrances to media coverage of climate change issues. It provides recommendations on how journalists must improve reporting skills by introducing scientific accuracy and future visions so that the media becomes a pro-active leader in the nation's climate agenda. Based on research of climate activists' and professionals' perceptions of the role of the media, this study describes how climate professionals can enhance the effectiveness of their media engagement to better represent their messages and influence policy change. It also contains climate action that needs the partnership of the media, activists, and policymakers in response. This research is participation to the existing academic literature about the overlapping of media, climate change communication, and policy making.

Hypotheses

H1: There is a strong correlation between media coverage of climate change and the formulation of climate change policies in Pakistan.
H2: Media faces tremendous difficulties in communicating climate change critically and influencing policy changes in Pakistan due to political, economic, and resource constraints. (For objective number two testing and finding in study)
H3: Greater coordination between media professionals, climate change experts, and policymakers will significantly enhance the effectiveness of climate change communication and policy formulation in Pakistan.

Limitations of the Study

This study, while providing valuable understanding of media's contribution to climate change communication and policy making in Pakistan, is subject to a host of limitations. First, the research is geographically limited to climate change experts, activists, and scholars in Pakistan, hence limiting the generalization of

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DIALOGUE SOCIAL SCIENCE REVIEW

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findings to larger groups, such as the general public or media consumers who may hold diverse perspectives. The 100 sample of respondents, as large as it is for statistical purposes, is perhaps too small to capture all the range of opinion within the wider climate change and media communities in Pakistan. The groups selected are also at risk of response bias in that they are largely drawn from members who are already engaged in the climate change debate. As such, what they perceive might be a reflection of what is already believed regarding the impact of the media in climate policy, which could potentially influence the outcome of the study. Another limitation is that the study primarily considers traditional and electronic media, but not additional means like social media or civil movements that are increasingly shaping climate change awareness and activism. Survey design, even though helpful for quanta data analysis, may not represent the level of interaction among climate professionals, media, and policymakers, and additional qualitative analysis such as interviews or case studies can reveal richer observations. These might be deemed to interpret results; future research should cover such gaps with greater sample breadth, mixed methodologies, or by employing emerging media forms.

Literature Review

To confront mounting global threats, the United Nations adopted the 2030 Agenda for Sustainable Development in 2015. This far-reaching initiative comprises 17 Sustainable Development Goals (SDGs) and 169 specific targets aimed at tackling major global challenges by 2030 (Nerini et al., 2017). Among these, SDG 13 focuses explicitly on climate action, calling for urgent interventions to curb environmental degradation and enhance resilience (United Nations General Assembly, 2017).

Mitigation plays a vital role in any climate strategy, mainly by curbing emissions of gases like carbon dioxide and methane two leading agents of the greenhouse effect and global warming. Combating climate change demands coordinated efforts across governments, private sectors, and civil society. Furthermore, its wide-reaching impacts mean climate considerations must be embedded throughout the broader development agenda (Smajgl et al., 2015).

In tandem with scientific initiatives and policy development, the media's influence in shaping public perception of climate change has received growing scholarly attention. While global agreements and empirical data create the basis for coordinated action, public understanding and engagement are often filtered through media narratives (Boykoff & Roberts, 2007). Media coverage across traditional and digital platforms plays a central role in informing audiences, framing attitudes, and encouraging or discouraging civic involvement (Nisbet & Scheufele, 2009; Stecula & Merkley, 2019).

Framing is especially influential in how environmental issues are interpreted by the public. The media's choice to highlight specific elements of climate change while neglecting others can dramatically shape audience responses. For example, portraying climate change as a public health threat can enhance support for intervention, whereas stressing the economic burden of green technologies may dampen enthusiasm (Nisbet & Scheufele, 2009). As noted by Wilson (1995) and McCombs (2011), media outlets act as intermediaries, translating complex scientific knowledge into accessible, relatable content.

Nevertheless, this influential role is not without complications. Misleading or

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DIALOGUE SOCIAL SCIENCE REVIEW

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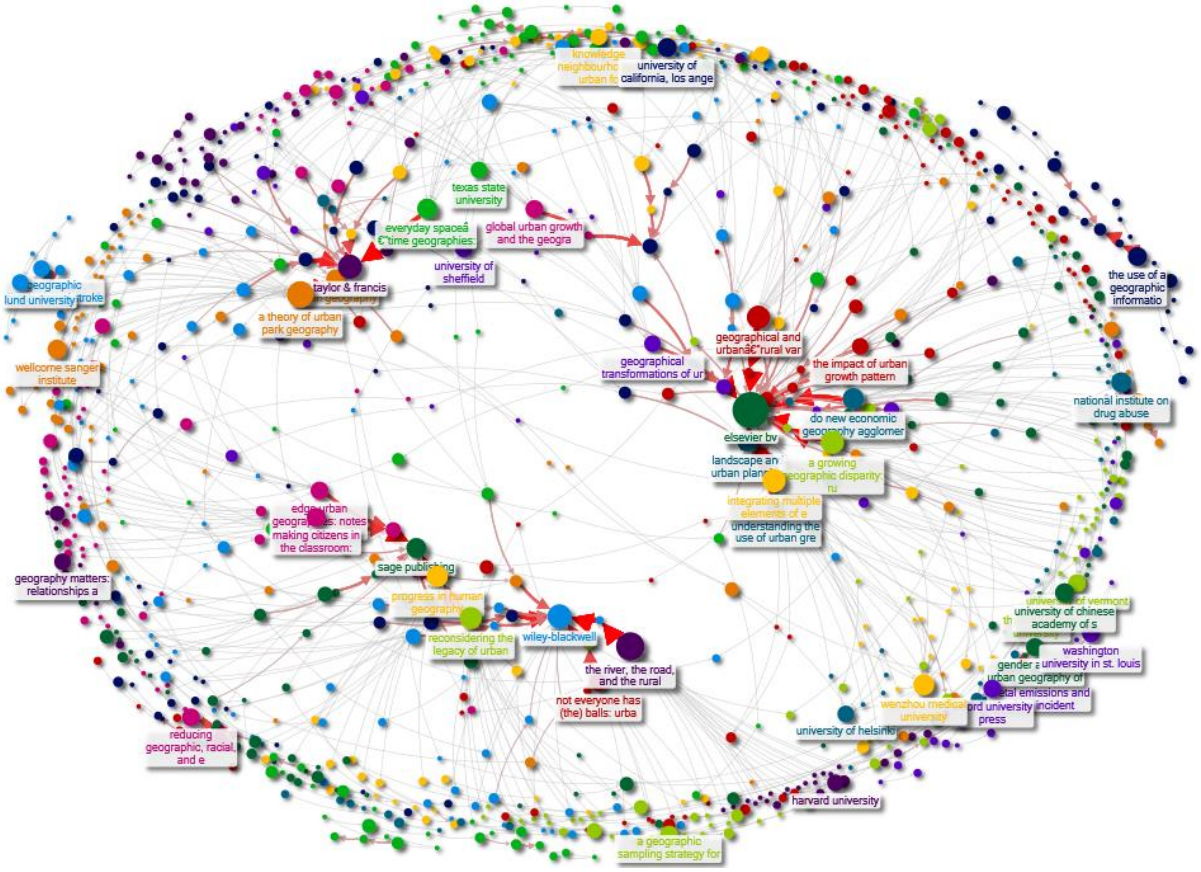
overly dramatic reporting can foster misunderstanding, pointing to the critical need for accurate, responsible journalism that fosters informed public dialogue (Nisbet & Scheufele, 2009). Today's media landscape, encompassing print, broadcast, and online platforms, features a diverse cast of communicators, from traditional reporters and editors to influencers and content creators (Boykoff & Roberts, 2007). These figures utilize a wide array of formats from long-form investigative pieces to performative storytelling to bring climate narratives to life for varied audiences.

Scholarly interest in the evolving nexus between climate science and media continues to grow. Bauer's (1995) foundational work explored media's impact during the nuclear energy debate, while newer research investigates how digital platforms reshape climate communication strategies (Brüggemann & Engesser, 2014). The deliberate use of imagery, metaphor, and emotional appeal remains a powerful means of shaping public discourse (Boykoff & Boykoff, 2007), underscoring that media do more than report they actively construct societal perceptions and responses to the climate crisis across the globe and Pakistan.



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Research Design

This study is employed a quantitative research design using a survey method to explore the role of media informing climate change policy in Pakistan. The research design is structured in a manner to collect empirical evidence regarding the perception of climate change.

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DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 3 No. 5 (May) (2025)

Research Genera: The study is descriptive in nature, and its aim is to describe and analyze the prevailing media coverage of climate change matters in Pakistan, and its impact on the awareness of the public and policy formulation. It also tries to identify challenges and opportunities at the media policy nexus, and based on the findings of the study, offer pragmatic recommendations.

Population and Sample: This study involves climate change activists, experts, and researchers actively engaged in climate change discussion, research, and advocacy in Pakistan. The sample size for the survey is 100 respondents to give a statistically significant sample of the most significant stakeholders that care about climate change issues. Participants are using stratified random sampling to give variety across different fields such as media, environmental science, and policy advocacy.

Data Collection: The preeminent means of data collection is a structured questionnaire survey seeking to gather both quantitative and qualitative data. It consists of closed ended questions to quantitatively measure attitude, perception, and experience regarding media coverage regarding climate change and open ended questions to gather more in depth data. The survey questionnaire administered online to the respondents that accessed readily with a faster rate of response.

Variables and Measures

- Independent Variables: Variables such as media frequency of coverage, media channels are using and media framing in connection to climate change issues are taken into consideration in this research study.
- Dependent Variables: Media's perceived impact on policy and public awareness about climate change are the primary dependent variables.
- Control Variables: Control variables to minimize bias include variables like professional background, experience with climate change advocacy, and level of education.

Ethical Considerations: The research upholds the ethical guidelines at all times during the study. The participants are informed of the purpose of the study and provide consent before responding to the survey. Their responses are treated with confidentiality, and they can withdraw at any moment without punishment and safely stored and accessed by research.

Research Methodology

The research design in this study is quantitative with a survey research approach to collect data from significant stakeholders like climate change professionals, activists, and researchers. The design aims to obtain systematic and empirical data to investigate the relationship between media coverage of climate change and climate policy making in Pakistan.

Research Approach

The current study utilizes a quantitative research approach, which is most appropriate for measuring the impacts of media on climate change policy making

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DIALOGUE SOCIAL SCIENCE REVIEW

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and sensitization. Quantitative research allows for gathering numerical data that is analyzed statistically to test hypotheses and identify patterns of association. The use of the survey method of data collection allows for the simplicity of collecting large scale responses from respondents and providing credible data for hypothesis testing, findings, conclusion and recommendations of this research.

Research Population and Sample

The research population includes climate change practitioners, activists, and researchers working in Pakistan, particularly those who work on climate change advocacy policy making. These practitioners are seen as the major point of contact for understanding how media influence the formulation of climate policies.100 participants are a random sample for the purpose of this study to have a representative sufficient population for statistical analysis. Stratified random sampling applying for this research, guarantees that various subgroups within the population are adequately represented within the sample population, making findings more accurate and reliable in this research study generalization.

Validity and Reliability

In order for the survey tool to be valid and trustworthy, the questionnaire also undergone pilot testing with a limited sample of experts (10-15 individuals) to identify any issue in terms of the questions and to enhance them for better clarity and efficiency. Pilot testing feedback is incorporated prior to actual final survey release.

Ethical Considerations

All the participants are provided an informed consent questionnaire explaining research intent respondent confidentiality and voluntary nature. Their anonymity is maintained and responses are not used against them for reasons other than as a part of this research study. Participants would be free to withdraw from research at any stage without any consequences.

Data Collection Instrument

The primary data collection tool in this study is a structured survey questionnaire, the purpose of which is to gather both quantitative and qualitative details of participants' views about the role of the media in climate change policy. The survey consists of closed ended questions to gather quantifiable data and open ended questions to allow the respondents to provide more detailed information.

Data Analysis: The data collected through the surveys are addressed using statistical programs such as SPSS to conduct descriptive and inferential statistics. Descriptive statistics are utilized to tabulate demographic data and responses to broad questions. The study makes use of pie charts to represent the information in graphical form to better comprehend.

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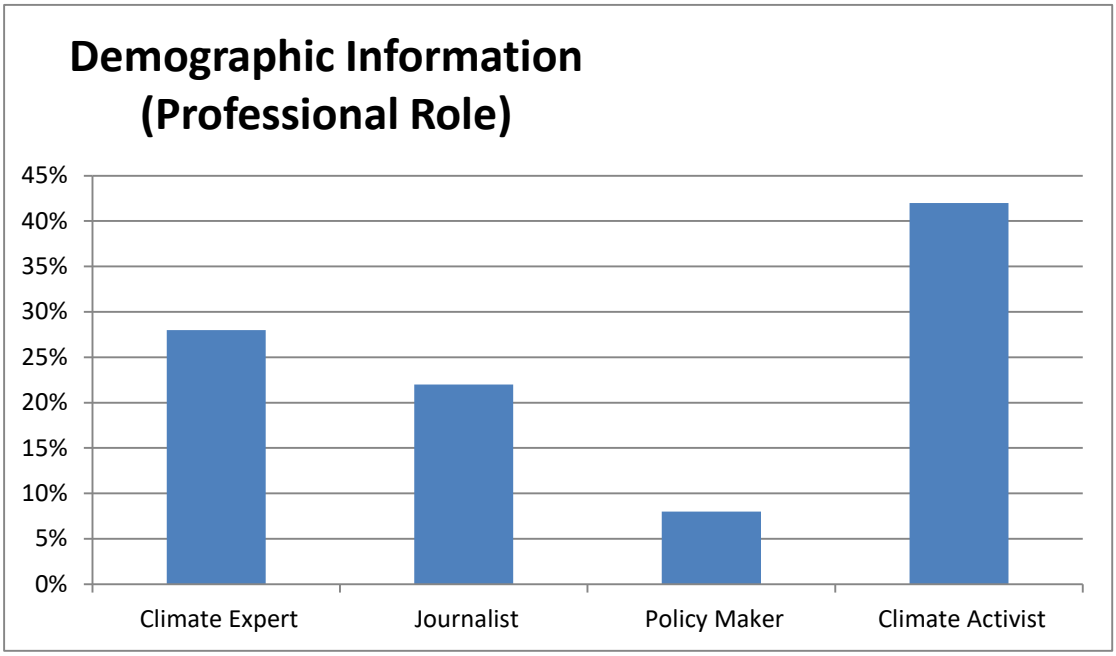
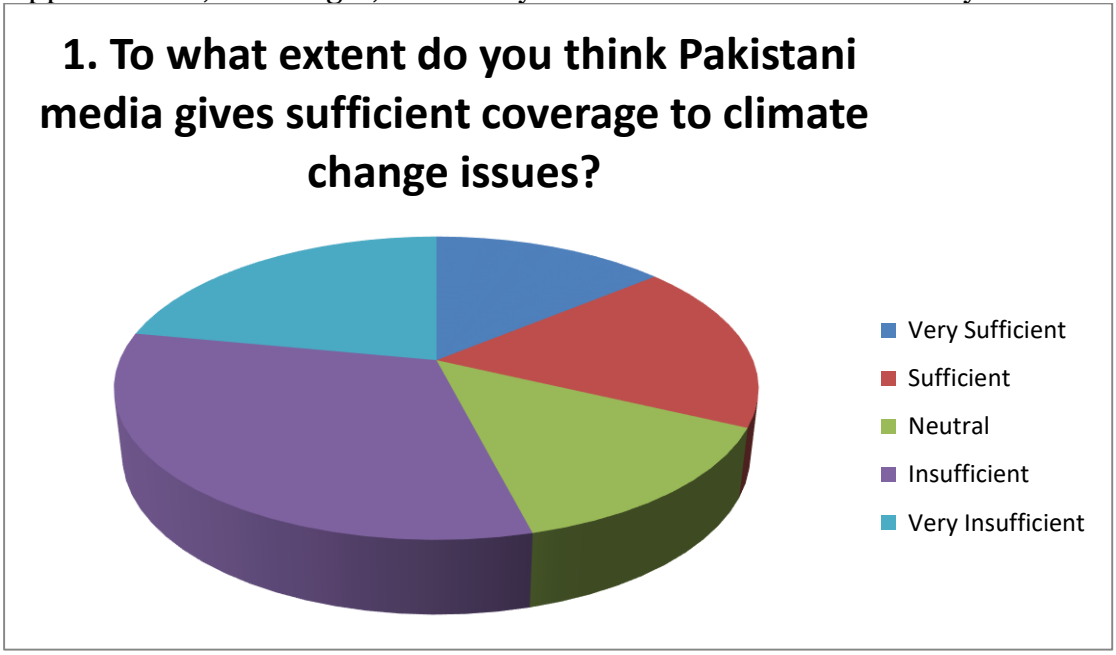


Discussion: Demographics of the collected data reveal that 28% climate expert, 22% journalists, 8% policy makers, and 42% climate change activists participated in this research study titled as Climate Change and Media Policy Nexus: Opportunities, Challenges, and Policy Recommendations: Case Study of Pakistan.



Discussion: The study found that majority of the respondents claims that media doesn't give sufficient coverage to climate change while other respondents believe that media give sufficient information regarding climate change and some of the respondent response is found neutral.

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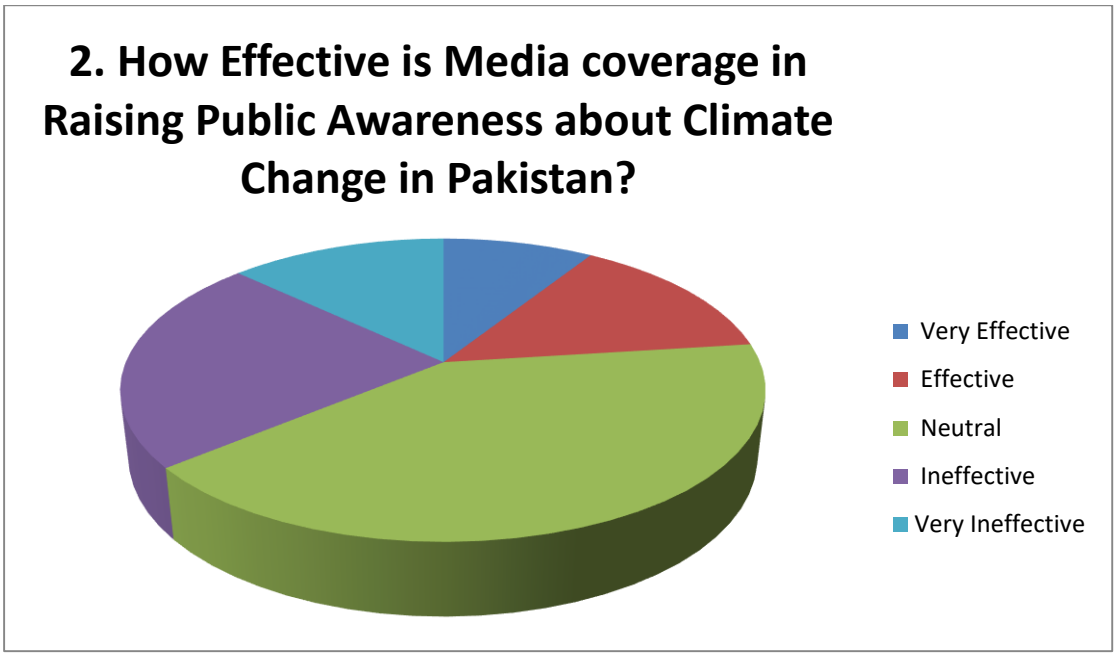
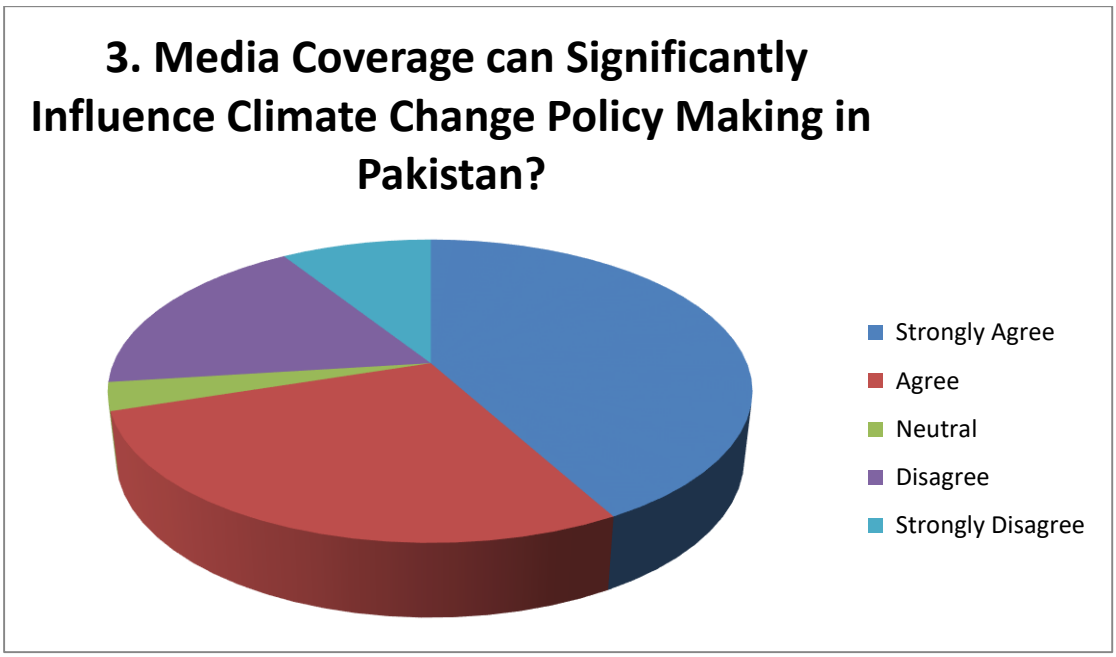


Discussion: This study reveals shocking conclusion cause majority of the respondent response is neutral as recorded from our questionnaire distributed among the sample, collected, analyzed, and presented above in pie chart.



Discussion: Analysis of the data reveals that overall media coverage can significantly influence climate change policy making in Pakistan, the nexus of media, climate change, and policy is interrelated and has a significant and direct relationship.

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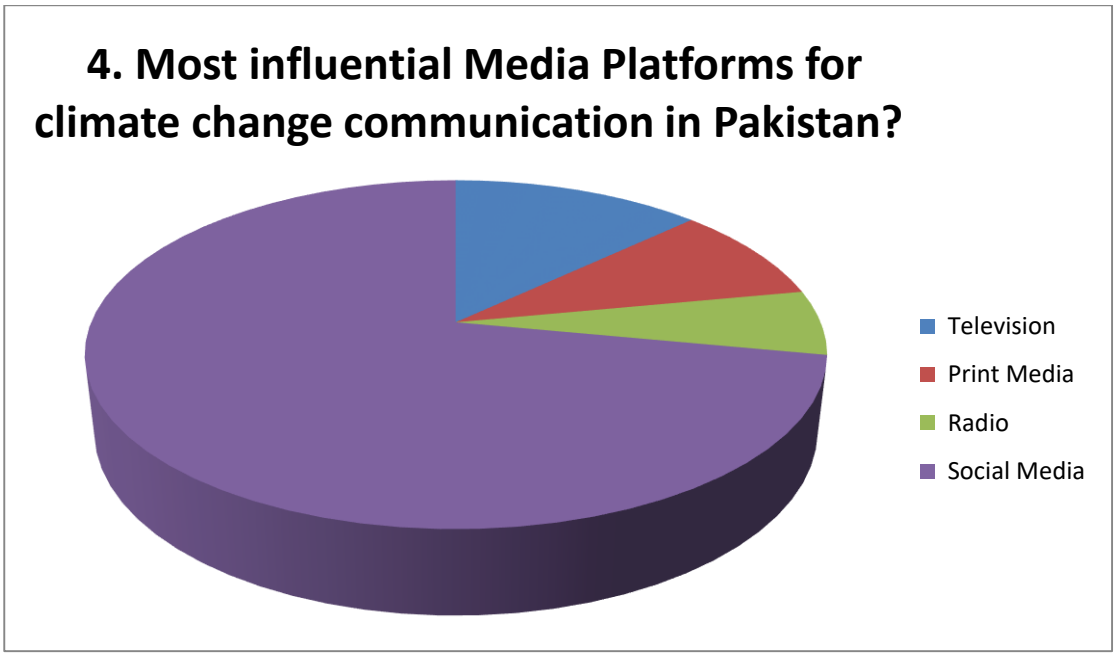
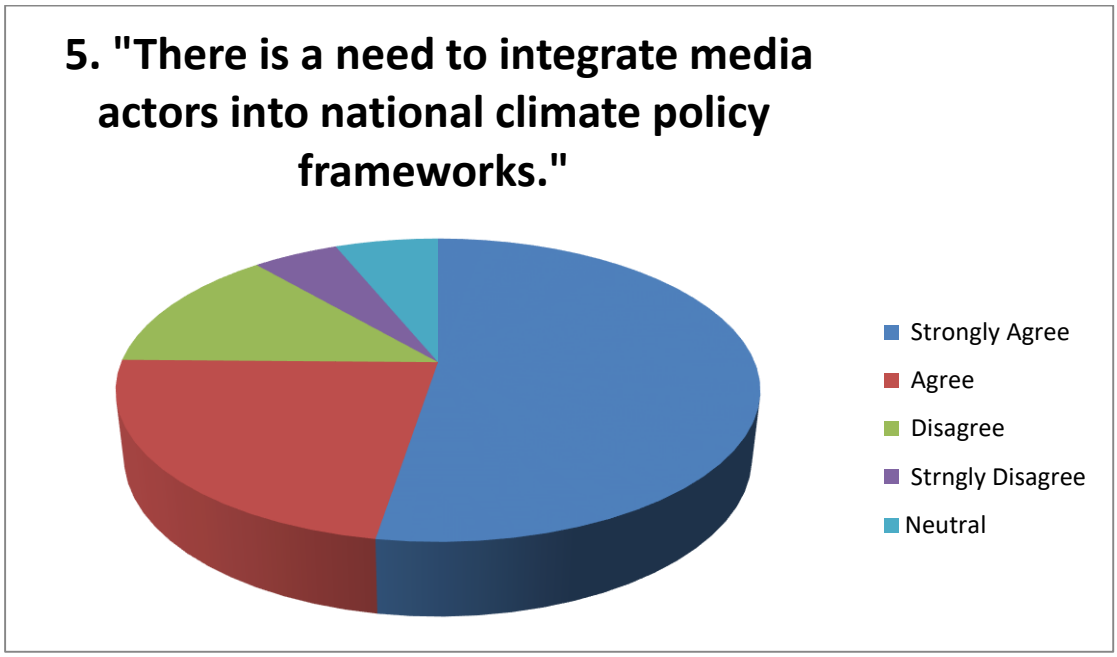


Discussion: The most influential mass communication platform for climate change communication is found social media as response of the climate experts, journalists, policy experts, and climate activists. Social media has changed the dynamics of receiving, sharing, producing information, hence Social media is also found as the most influential platform for climate change communication, similarly Television, Radio, and Print media has also a minor role in climate communication in Pakistan. However the Radio is still influential in climate communication at remote areas.



Discussion: The study analysis reveals that there is a need to integrate media actors into Pakistan's national climate policy frameworks while few of the respondents oppose and claims that there is no need to integrate media professionals into national climate policy frameworks.

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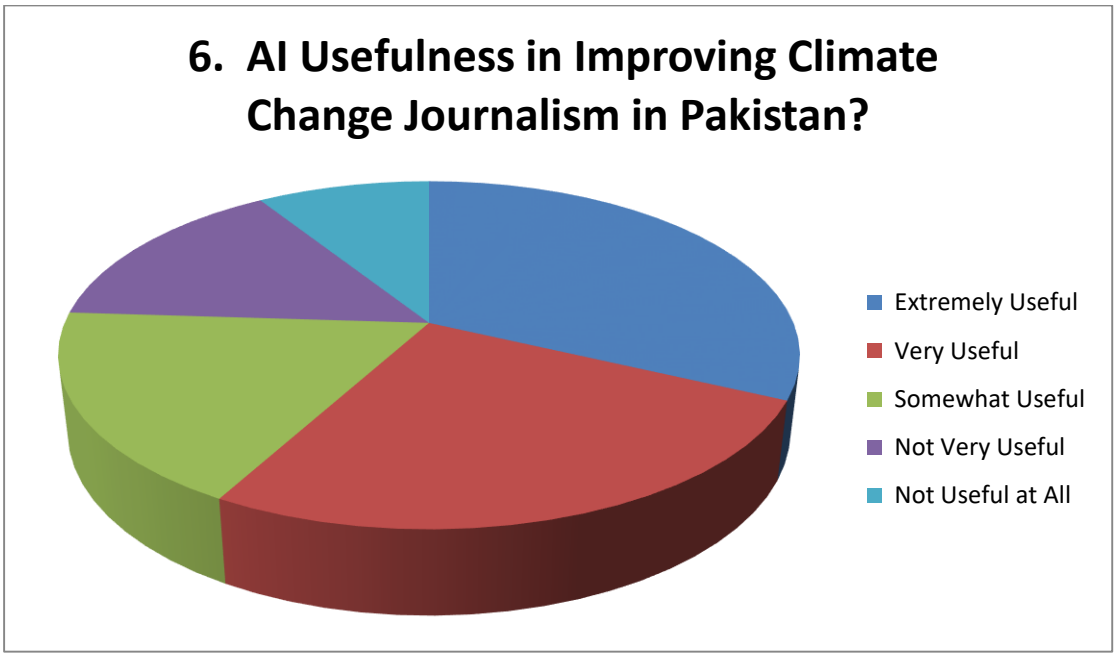
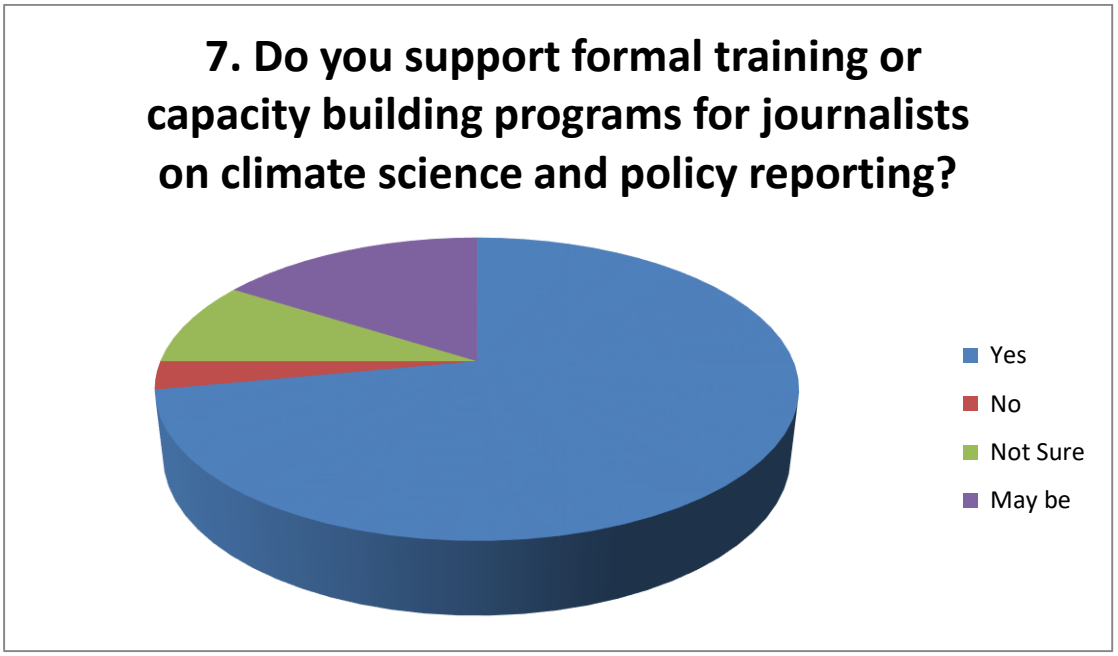


Discussion: Experts, Activists, Journalists, and Policy developers opinion regarding artificial intelligence usefulness in improving climate change journalism in Pakistan is found somewhat unbalanced cause most of them were found agreed and strongly agreed upon this statement while some of them claimed that this isn't useful.



Discussion: The study reveals that experts, journalists, activists, and policy makers are agree and support formal training or capacity building programs for journalists on climate science and policy reporting while very few of them are laggards and reluctant and do not support this statement.

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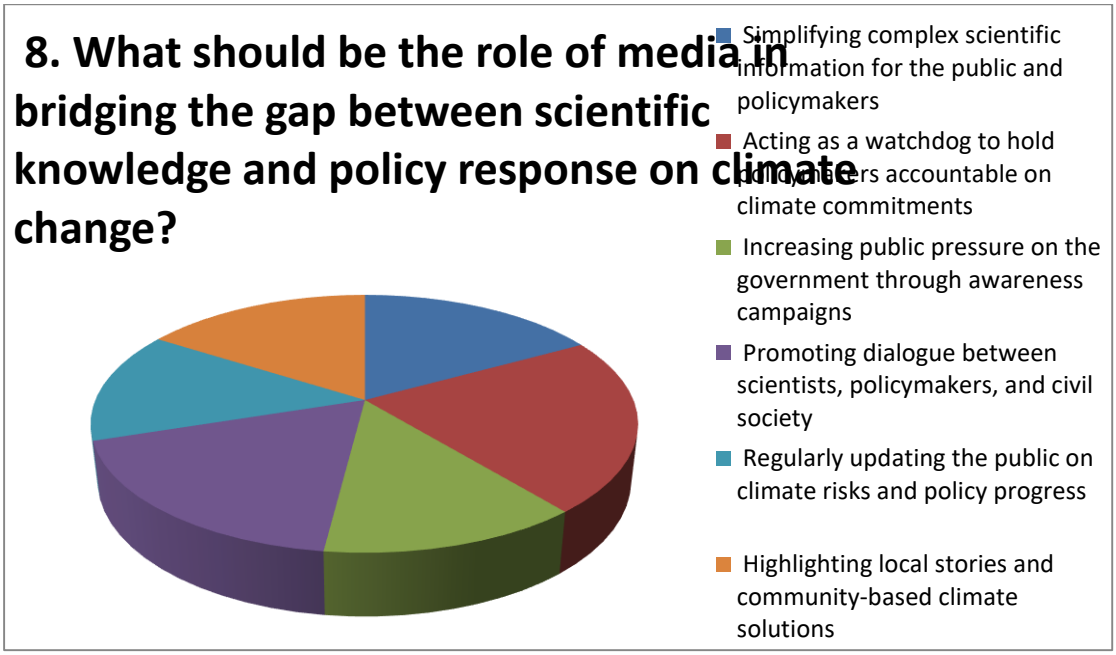
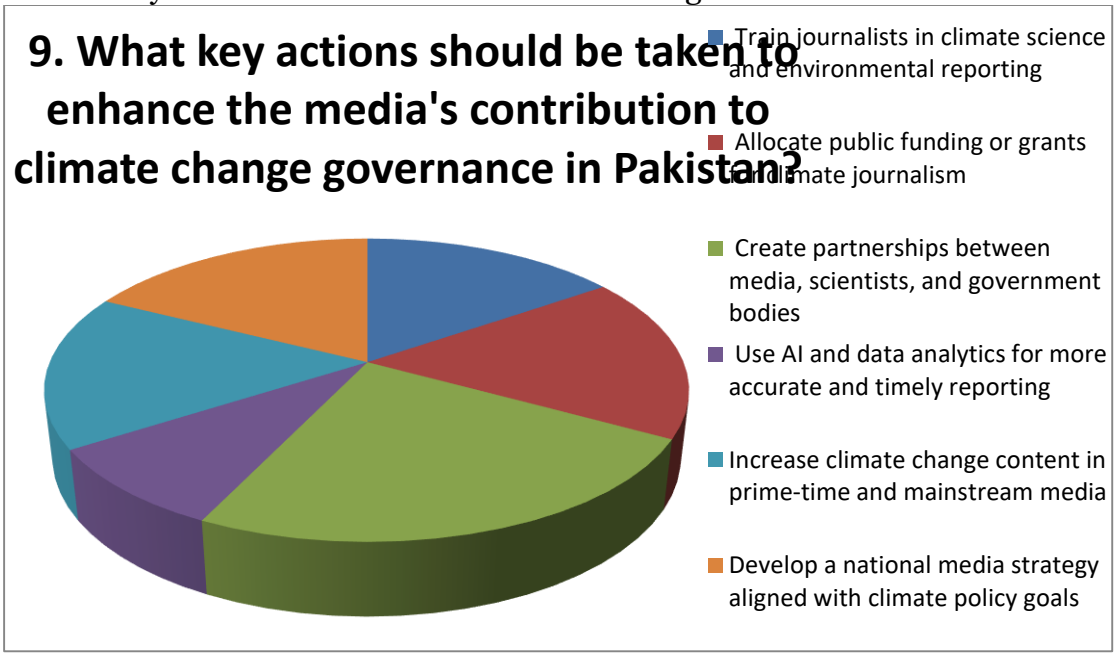


Discussion: The role of media in bridging the gap between scientific knowledge and policy response on climate change cover the following domains; Simplifying complex scientific information for the public and policymakers, Acting as a watchdog to hold policymakers accountable on climate commitments, Increasing public pressure on the government through awareness campaigns, Promoting dialogue between scientists, policymakers, and civil society, Regularly updating the public on climate risks and policy progress, and Highlighting local stories and community-based climate solutions at various significant ratios.



Discussion: The key actions recommended by experts, activists, and journalists are; Train journalists in climate science and environmental reporting, Allocate public funding or grants for climate journalism, Create partnerships between media, scientists, and government bodies, Use AI and data analytics for more accurate and timely reporting, Increase climate change content in prime-time and

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DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 3 No. 5 (May) (2025)

mainstream media, Develop a national media strategy aligned with climate policy goals, and Enforce editorial independence from political and corporate influence at various significant levels and ratios.

Findings

Findings are based on a study that examined interviews of 100 climate change professionals, researchers, and activists. The findings shed light on the role of media in shaping public awareness and climate change policy in Pakistan.

1. Coverage of Climate Change by the Media: The survey indicated a majority (approximately 70%) of the respondents stated that climate change is not given adequate media coverage, particularly on traditional media like television and print media. However, more respondents (approximately 45%) indicated that electronic media and social media websites are increasingly used for discussions on climate change and campaigning in Pakistan and worldwide.

2. Perception of Media's Effectiveness: Approximately 60% of the respondents concurred that media is a crucial force in generating public awareness on climate change, but only 35% believe media is able to influence policy making. A considerable percentage (approximately 40%) believe that the media's influence on policy is limited as there wasn't much extensive coverage and spotty reporting on the issue is on other hand very least available in Pakistan

3. Problems Encountered by Media: The respondents considered the primary challenges to be the lack of resources (mentioned by 50%), the lack of media professionals handling climate change issues (45%), and political partisanship in media coverage (40%). These are obstacles in the way of the media being able to provide a unified and coherent message of the urgency to tackle climate change in Pakistan and across the globe worldwide.

4. Opportunities for Improvement: A number of respondents also underscored the potential of data journalism and artificial intelligence (AI) to improve the quality of media reports on climate change. Some 55% of the respondents said AI is able to assist in creating more localized and data driven content in order to win over audiences and policymakers.

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DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 3 No. 5 (May) (2025)

Conclusion

The research work undertaken concentrates on the media role in climate change communication and how that translates into policy making in Pakistan. It argues that the media do have a significant role in creating awareness about climate change but they hardly impact policy decision making. By identifying shortcomings in resources and skills as well as political bias, it makes it evident that these factors draw the media away from effectively shaping the climate change policy.

Furthermore, it discusses a rather growing potential of social as well as digital media where such forms are perceived as more potent avenues for compelling an audience and generating buzz about climate issues. Despite such hindrances, a vast array of possibilities exists for the application of artificial intelligence, data journalism, and better training for journalists to enhance climate change reporting through the media.

Future Research Directions

Bird Eye View of Single Angle Future Research Directions Supported By Elon Musk

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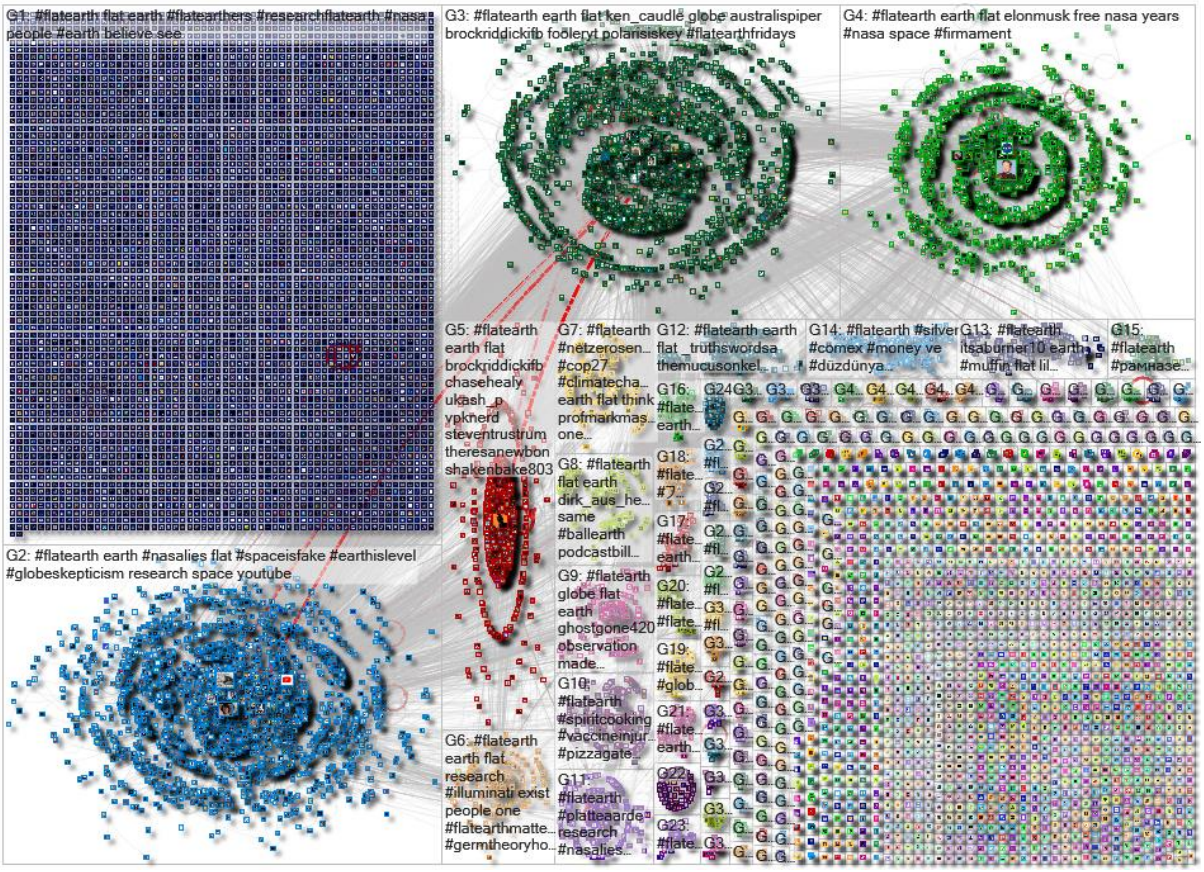

SMR Foundation, 2024 #flatearth Twitter NodeXL SNA Map and Report

The graph represents a network of 8,832 Twitter users whose recent tweets contained "#flatearth", or who were replied to, mentioned, retweeted or quoted in those tweets, taken from a data set limited to a maximum of 30,000 tweets, tweeted between 1/1/2023 12:00:00 AM and 5/17/2023 7:00:00 PM. The network was obtained from Twitter on Monday, 26 August 2024 at 01:17 UTC. The tweets in the network were tweeted over the 2171-day, 8-hour, 44-minute period from Saturday, 15 September 2018 at 18:31 UTC to Monday, 26 August 2024 at 03:16 UTC. There is an edge for each "replies-to" relationship in a tweet, an edge for each "mentions" relationship in a tweet, an edge for each "retweet" relationship in a tweet, an edge for each "quote" relationship in a tweet, an edge for each "mention in retweet" relationship in a tweet, an edge for each "mention in reply-to" relationship in a tweet, an edge for each "mention in quote" relationship in a tweet, an edge for each "mention in quote reply-to" relationship in a tweet, and a self-loop edge for each tweet that is not from above. The graph is directed and the graph's vertices were grouped by cluster using the Clauset-Newman-Moore cluster algorithm, the graph was laid out using the Harel-Koren Fast Multiscale layout algorithm. (NodeXL Graph Gallery)

Policy Recommendations

At the heart of climate action lies an integrated approach involving mitigation, adaptation, and a sophisticated understanding of evolving environmental conditions (United Nations, n.d.). Key priorities include lowering greenhouse gas outputs, strengthening adaptive responses to climate threats, and raising

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awareness of the interconnected factors that drive climate systems globally. SDG 13 also emphasizes the need for stronger institutional frameworks, local capacity-building, implementation of the United Nations Framework Convention on Climate Change (UNFCCC), and the establishment of effective planning tools to address future climate risks (United Nations, n.d.). Other most important recommendations include the following for this research study of nexus;

1. Improve Media Coverage of Climate Change: There is a need to improve the quality and level of media coverage of climate change, especially on mainstream media like television and print. This is achieved by providing incentives for media outlets to prioritize reporting on climate change.

2. Capacity Building for Journalists: Many of the respondents indicated that the deficiency of journalistic knows how on climate change is one of the foremost challenges to effective media coverage. Governments need to invest in science, policy, and reporting knowledge training programs for journalists on climate change.

3. Facilitate Use of Social Media and Digital Media: With rising digital media potency in shaping opinion, policymakers are required to promote the utilization of digital media towards climate change campaign advocacy. They facilitate enabling content creators producing content regarding matters of climate change and promote coalitions between NGOs in the environmental sector.

4. Encourage AI Integration: The potential of AI to transform climate change communication must be leveraged. Policymakers must encourage media outlets to adopt AI based tools for personalized content, data journalism, and real time climate reporting. AI based tools used to improve credibility.

5. Strengthen Public Private Partnerships: The government can facilitate partnerships between the media, private sector, and NGOs to promote collaborative climate change communication and also help bridge the resource gaps of media houses.

6. Promote Policy Dialogue: Media act as a conduit between scientific communities, policymakers, and publics. Establishing platforms of dialogue, such as policy forums and public debates broadcast on media channels, promote collaborative decision making.

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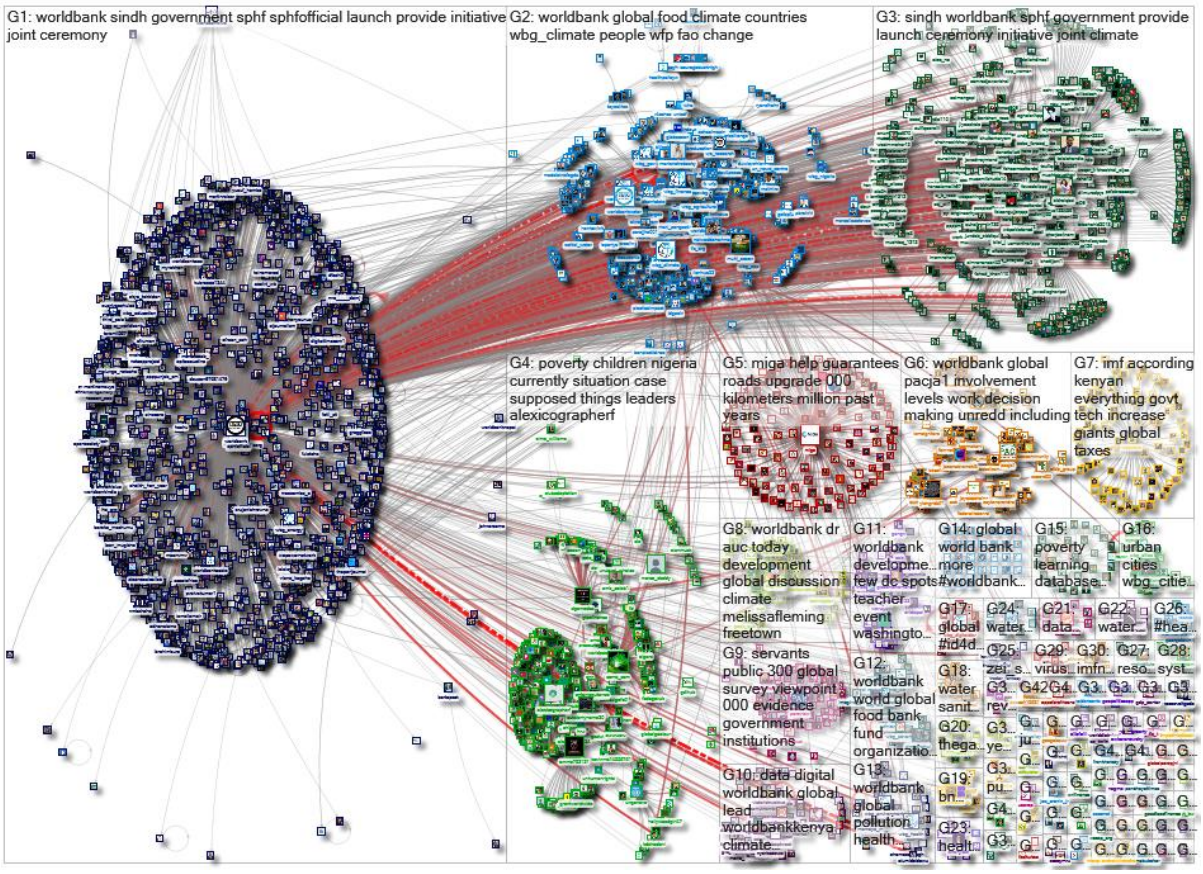

Netizens Recommendations/Actions Discussion on X Analytical Overview

The graph represents a network of 4,035 Twitter users whose recent tweets contained "Worldbank (environment OR climate OR warming OR ecological OR planet OR global)", or who were replied to, mentioned, retweeted or quoted in those tweets, taken from a data set limited to a maximum of 5,000 tweets, tweeted between 3/26/2006 12:00:00 AM and 2/12/2023 5:00:35 PM. The network was obtained from Twitter on Monday, 13 February 2023 at 18:33 UTC. The tweets in the network were tweeted over the 1238-day, 1-hour, 51-minute period from Monday, 23 September 2019 at 23:00 UTC to Monday, 13 February 2023 at 00:51 UTC. There is an edge for each "replies-to" relationship in a tweet, an edge for each "mentions" relationship in a tweet, an edge for each "retweet" relationship in a tweet, an edge for each "quote" relationship in a tweet, an edge for each "mention in retweet" relationship in a tweet, an edge for each "mention in reply-to" relationship in a tweet, an edge for each "mention in quote" relationship in a tweet, an edge for each "mention in quote reply-to" relationship in a tweet, and a self-loop edge for each tweet that is not from above. The graph is directed and thegraph's vertices were grouped by cluster using the Clauset-Newman-Moore cluster algorithm, the graph was laid out using the Harel-Koren Fast Multiscale layout algorithm. (NodeXL Graph Gallery)

According to Nerini et al. (2019), climate solutions can accelerate progress on all 17 SDGs. Climate-related disruptions exacerbate food and water insecurity (SDGs 2 and 6), heighten health risks (SDG 3), and disproportionately affect marginalized populations, particularly women and children (SDGs 5 and 4). Conversely, decisive climate measures foster access to renewable energy (SDG 7)

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and promote sustainable economic advancement (SDG 8) (Sachs et al., 2016). Data from UNICEF (2022) and OCHA (2022) reinforce the devastating human and economic toll of climate disasters such as monsoon-triggered floods, which have displaced countless individuals and destroyed infrastructure. The World Bank (2022) estimates these events have caused damage running into billions of dollars.

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