

Citizen Journalism and Shaping Environmental Activism: A Study on the Impact of Deforestation Narratives in Sindh

Bushra Luqman ^a Muhammad Rashid ^b Shanza Ehsan ^c

Abstract: This study discovers the role of citizen journalism in shaping deforestation narratives and promoting environmental activism in Sindh, Pakistan. While environmental journalism has obtained extensive scholarly attention, limited research reports how citizen journalists precisely frame deforestation and influence public engagement. Using Framing Theory as the analytical lens, this research uses qualitative content analysis of blogs, social media posts, and videos produced by citizen journalists. The findings specify that deforestation is framed as a complicated issue linked to governance failure, corruption, and ecological degradation. These narratives emphasize the urgency of policy reform and advocate for balanced forest management. Though the study depends on digital content, it demonstrates the potential of citizen journalism to raise awareness and mobilize collective action. The research contributes to academic discourse on the media–environment connection and highlights the grassroots power of digital environmental advocacy.

Keywords: Citizen Journalism, Deforestation, Sindh, Environmental Activism, Framing Theory

Introduction

Deforestation is a world ecological problem involving the long-term clearing of the cover of the world's forests for agriculture, urbanization, as well as logging. According to the Food and Agriculture Organization (Global Forest Resources Assessment, 2020), the world lost approximately 10 million hectares of the world's cover every year from 2015–2020, a factor posing significant threats to the world's climatic stability, as well as the world's diversity. Deforestation's impact is more than ecological loss because the world's forests have the role of keeping carbon from the air, as indicated by the work of (al, 2011). Deforestation is a rising problem for tropical developing nations since tropical forests decrease because of the loss of diversity as well as the intensification of green gases. (Okia, 2012). Forests contribute immensely to the economy through the supply of resources like timber as well as non-timber resources from the forest, ecological stability, regulation of rainfall, as well as the reduction of the sedimentation of the world's rivers. Climatic change as well as ecological contamination, as well as natural as well as man-made calamities like loss of land, flooding, agriculture, as well as world warming, have all been the contributing factors to the world's deforestation. (Habibullah U. Abbasi*, 2011).

The world's environment is under more strain than ever before, with the biggest issue being deforestation. Deforestation is the reduction of the cover of the world's forests, as described in the simplest terms. It is caused by natural as well as human factors, but irrefutably, the processes like urbanization, mining, and agricultural land use accelerate the process. (Collins, 2021) Deforestation is also becoming a growing concern in the country of Pakistan, with the province of Sindh being hit the hardest since its cover is dwindling at a rapid pace because of urbanization as well as the growth of the economy. A mere 144 hectares, representing less than 0.1% of the geographical area of the province of Sindh, comprised the cover of the province as of 2010. Less than 1 hectare of cover loss occurred in the province as of 2023, which accounted for 2.76 kilotons of emissions of CO₂. 16 hectares of cover loss occurred in the province from 2001 through 2023, representing 0.75% loss compared to 2000 and is equal to about 6.42 kilotons of emissions of CO₂. Hyderabad, having lost 10 hectares of cover from 2001 through 2023, as well as Karachi,

^a MS Media Scholar, Riphah Institute of Media Sciences, Riphah International University, Islamabad, Pakistan.

^b Senior Lecturer, Riphah Institute of Media Sciences, Riphah International University, Islamabad, Pakistan.

^c MS Media Scholar, Riphah Institute of Media Sciences, Riphah International University, Islamabad, Pakistan.

having 5 hectares' loss, were the areas hit the hardest. Global warming as well as the process of climatic change is enhanced with the rising level of CO₂ in the environment because of every hectare of the loss of the cover. (Global forest Watch, Real-time)

In addition, Sindh's forests have changed drastically since Pakistan came into being in 1947. Preceding to World War II, forests of Sindh were full of sap. But many reasons like , military actions stress and increased use of forests led to a drastic loss of natural resources. (Keerio, April 2000) Sindh covers almost 14.09 million hectares area of the lower Indus delta. The province's major use of land includes agriculture, forestry, and cropping. The Indus River paths through Sindh for 865 kilometers from area of Guddu Barrage to the Arabian Sea, delivering water for irrigation, forestry, and for the consumption of human being. Economy and ecology of Sindh rely heavily on the riverine tract and delta formed by the Indus River. As the time passed, the country's economy has developed significantly due to agricultural development and industrial development. On the other hand, the association of irrigation projects along the upper Indus and its tributaries for water storage and diversion for agricultural and power production has resulted in a number of climate challenges, which also includes deforestation. (Shah, 2000).

Addressing these concerns is a requirement for heightened people's awareness as well as mobilization. Although the traditional media underestimates these concerns, citizen journalism is the activities of a citizen, or group of citizens, who take a part in the process of gathering, reporting, analyzing, and broadcasting the news and information as described by Bowman and Willis (Jurrat, 2011, pp. 6-10).). In this regard, citizen journalism can be highly instrumental in mobilizing people in the struggle against the cutting down of the trees in the province of Sindh through the provision of people's voices, awareness about the issue of the environment, as well as the championing of more environmentally friendly actions. By reflecting the voices of the people, citizen journalism educates the people as well as mobilizes them toward action, thus being a necessary ingredient in the struggle against the cutting down of the trees.

This thesis research is about the significant role of citizen journalism in shaping environmentalism in Sindh, with a focus on how stories about deforestation evolve, spread, and engage with local people and other stakeholders. It aims at ascertaining the level at which citizen journalism fosters people's awareness and activism regarding the issue of deforestation in Sindh through analyzing the present patterns of citizen engagement, the role of social media sites, as well as case studies of the mobilization of people. It also aims at having a concrete understanding of how citizen journalism can foster people's action as well as the difficulties of scaling local voices.

Research Objectives

1. To study the framing of deforestation narratives in citizen journalism matter related to environmental activism in the province Sindh.
2. To investigate how citizen journalism, promote public discourse and awareness concerning deforestation in Sindh.

Research Questions

1. How are narratives about deforestation framed in citizen journalism content are related to environmental issues in Sindh?
2. How does citizen journalism play their role in public discourse and create awareness about deforestation in Sindh?

Literature Review

Deforestation represents a major global environmental issue, drastically impacting species diversity, climatic stability, and human livelihoods . (Global forest resources Assessment, 2020) reported an alarming annual loss of 10 million hectares of forest cover from 2015 to 2020, mainly due to agricultural growth, unmanageable logging, and urbanization. Forests, acting as carbon tanks, control climate by absorbing CO₂ and discharging vapor for cooling. Deforestation worsens global warming through increased CO₂ emissions and reduced absorption abilities, leading to climatic disasters like droughts, floods, and wildfires.

The harmful impacts of forest loss has created problems for human societies for centuries (Allen, 1985) with global forest cover in a worrying decline (Köthke, 2013). Future burdens result from rising global food requests, biofuel market development, and continued natural resource use. (Carlson, 2012). Deforestation has clearly proven unwanted outcomes with significant global economic costs (Barua, 2012), including changes in local microclimates, increased wildfire experience, land erosion, and watershed decline. While natural forest protection boosts biodiversity, deforestation causes extensive habitat loss from both natural (e.g., fires, droughts) and, primarily, man-made drivers like infrastructure development, mining, agriculture, and unsustainable timber reaping. (Kemetonye Joy Seomoni, 2021)

Narrative is broadly used across many fields, including environmental education (Do Carmo Galiazzi, et al., 2019). (Morris, et al., 2019) evoke that in climate change conversations, stories transmit messages as images and sounds, assisting experiential processing and advising pro-environmental actions. This hypothesis has been validated, with story-based teaching research expanding since the 2000s (Ge & Shi, 2014).

Story-structured narratives improve emotional influence and personal practices, encouraging pro-environmental behavior (Morris, et al., 2019). Narratives that enlighten story qualities (Morgan, 2017) improve students' understanding and engagement (Dahlstrom, 2014). The importance of deforestation narratives in environmental advocacy is clear: they are important in shaping public understanding and concern by highlighting complex issues, making them less abstract, and assembling opinion and action. Narratives emphasizing forest conservation's role in climate regulation, biodiversity, and human welfare have driven global advocacy movements (Nunez, 2022)

Sindh province, Pakistan, holds a rich and diverse ecological tapestry, including riverine forests and mangrove ecosystems. However, recent decades have seen an important decline in forest cover due to fast urbanization, agricultural development, and industrial growth. Reports show Pakistan faces an annual forest loss of approximately 50,000 hectares, with Sindh showing exceptionally high rates due to its population strength and financial activities (Global forest watch, 2025). These mangroves are vital for coastal protection against destruction and storm floods and support high marine biodiversity.

Their destruction increases regional liability to extreme weather and harshly impacts local fisheries, a key livelihood for coastal societies (Forests, n.d.). In Sindh, deforestation has ruined biodiversity, caused soil loss, tired fertility, and interrupted water cycles fueling desertification and destructive agriculture. Loss in mangrove forest has increased seaside flooding risks (Ali Raza Rizvi, 2004).

Countryside livings depending on agriculture and fishing have tolerated due to reduced yields and vanishing fisheries. Poverty and food insecurity have increased, pushing communities toward flawed forest use (Deforestation causing rural to urban migration: report, 2021), (Siyal, 2023). The federal government's Ten Billion Tree Tsunami Program (2019) purposes to reestablish forest cover, earning worldwide acknowledgement. However, Sindh struggles with weak operation, urban expansion, and limited provincial management. Mangrove restoration exists but shortages finance and implementation (Deforestation in Sindh, 2008) Community-based efforts, maintained by NGOs, show promise but need scale and resources (Climate change education initiative launched, 2024)

Deforestation in Sindh requires complex solutions, combining policy, community action, and sustainable growth. Citizen journalism can create awareness, influence public opinion, and hold authorities responsible. Media plays a key role in framing and highlighting climate issues— stressing health over financial costs can boost support (Nisbet, 2009); (Boykoff T. J., 2007). Mass media shapes knowledge of public about science (McCombs, 2011) but there is also risks of spreading misinformation. From traditional to social media, various professionals influence to environmental storytelling, affecting perceptions and responses; (Brüggemann, 2014); (Anderson, 2009)). In Pakistan, it is vital to track how climate issues are portrayed and understood.

Media plays a crucial part in rising awareness about deforestation and other environmental problems. As (Jaclyn Marisa Dispensa, 2003) argues, media does not purely state facts but helps shape the structure of truth, influencing how issues are noticed by the public. Traditional media outlets such as newspapers and scientific publications have factually informed citizens about the environmental concerns of

deforestation. Influential works, including Aldo Leopold's *A Sand County Almanac*, encouraged the idea of a land ethic, inspiring the responsible use and protection of natural resources.

(Boykoff M. , 2009) focuses the media's role in fostering public consideration of environmental issues, noting that exposure to environmental stories can update and mobilize public opinion. However, (Forsyth, 2003) warns that the media often overlooks marginalized viewpoints, stressing the importance of inclusive framing. Furthermore, the framing of environmental issues can be shaped by political, economic, and social agendas. Actors such as activists, NGOs, and journalists deliberately utilize media channels to shape narratives and drive environmental advocacy (Matthew C Nisbet, 2007)

Methodology

The best method for this research is qualitative content analysis because through it, the ways citizen journalism describes and portrays the problem of deforestation in Sindh can be closely analyzed. It is versatile as a method for investigating other citizen journalism sites because through it, multiple forms of the media can be analyzed, like text, image, and video.

Research Design

To analyze how citizen journalism is constructing frames regarding deforestation in the province of Sindh, Pakistan, qualitative content analysis (QCA) is the research method used in this research. Because QCA is the qualitative, systematic method for analyzing written and pictorial content in their communicative context, it is suited for the research's focus on citizen-generated media. By using QCA to code and classify data, researchers can identify recurring frames, examine the use of frames, and identify the use of narrative strategies.

Sampling

Purposive sampling is applied in the research to study citizen journalism coverage of the issue of deforestation in the province of Sindh. It is a method applied in the selection of the coverage for relevance with the research objectives. Digital citizen journalism postings, videos, and blogs from 2018 to 2024, when there is active environmental activism as well as online coverage, constitute the sample. Twenty-six postings from the following sites consist of the total sample:

Research contains 14 posts, 3 posts from the LinkedIn, 3 videos from YouTube and 6 posts from Facebook related to deforestation for data analysis.

Coding

In this research, the inductive method was utilized in the process of developing the coding categories or the themes. For the purpose of seeking recurring themes, issues, and stories regarding deforestation as well as ecological activism in the province of Sindh, the process started with the close reading of the select citizen journalism materials, which included social media entries, YouTube videos, as well as blogs. Based on the initial reading, the significant areas from the materials found included the role of influential people, illicit deforestation, city growth, as well as climatic change.

Data Collection

The selected postings will be analyzed and compared with regard to their content as well as their role in awareness-raising and mobilization efforts against deforestation. Attention will be given to the common themes, the frames used, as well as the role these postings have in shaping the perception of the public about the issue of the environment.

Data Categorization and Analysis

The sources have been labeled under their main topics and sub-topics for the organization as well as the analysis of the facts from the chosen content. It helped identify the common themes as well as tales, which have been summarized as follows:

Every source of data was carefully examined to create its main points and common concepts. These were categorized under three broad headings:

1. **Primary Themes:** The foremost focus of each source, such as deforestation, climatic change, heat island, or government's role.
2. **Sub-Themes:** Specific areas that are included in main theme, such as illegal logging, loss of biodiversity, and sustainable solutions.
3. **Key messages:** Any unique messages content creators conveyed through their content.

The following is the tabulated data:

Table 1

Data Analysis Table: Deforestation Narratives in Sindh

Source	Primary Themes	Sub-Themes	Key Messages	Framing
Blog written by Nasir Ali Panhwar – Title: Greening Sindh	Widespread Deforestation	Impacts: Climate Change, Urbanization, Public Health Risks	Urgent advocacy and ecological understanding are critical.	Crisis Frame
Blog written by Amar Guriro. Title: Sindh Loses Forests	Widespread Deforestation	Role of Powerful Actors (feudal lords), Illegal Occupation	Immediate action is needed to stop powerful actors.	Governance Frame
Blog Written by Salam Dharejo – Title: The Shrinking Forests	Widespread Deforestation	Corruption, Role of Powerful Actors, Failed Policies	Community-based conservation is vital for accountability.	Governance Frame
Blog written by Nausheen H. Anwar – Title: Cities & Climate	Climate Change Impacts	Urban Vulnerability, Limits to Planetary Existence	New sustainable approaches are necessary.	Environmental Justice Frame
Blog Written by: A.B. Arisar Title: The Vanishing Forests	Environmental Degradation	Biodiversity Loss, Government Failure	Urgent government intervention is required.	Crisis Frame
Blog written by: Marvi Mazhar et al. Title: Urban Greening	Urbanization & Environmental Justice	Limits of Current Initiatives, Need for Paradigm Shift	Indigenous knowledge and justice are vital for solutions.	Environmental Justice Frame
Blog written by: Sameer Mandhro – Title 200-Year-Old Trees Cut	Illegal Deforestation	Role of Law Enforcement, Protection Act	Law enforcement must act to prevent tree cutting.	Governance Frame
Blog written by: Asif Gul Title: Deforestation in Sindh	Widespread Deforestation	Drivers: Urbanization, Government Failure	Sustainable solutions require community involvement.	Governance Frame
Blog written by Mohamad Hussain Khan Title: Deforestation in Sindh	Deforestation & Economic Impact	Reforestation, Community Involvement	Need for sustainable forestry practices and solutions.	Economic Frame
Blog written by Ali Shahzad Dada – Title :Shield the Mangroves	Mangrove Deforestation	Urbanization, Climate Change, Economic Value	Sustainable management of mangroves is critical.	Environmental Justice Frame
Blog written by Sana Siddique Rahimoo Title: Restoring Ecosystems	Environmental Degradation	Impacts: Deforestation, Water Scarcity, Floods	Climate adaptation and community engagement are crucial.	Crisis Frame
Post by Awais on LinkedIn	Deforestation & Climate Change	Impact on Agriculture & Livelihoods	Reforestation and sustainable land management are necessary.	Economic Frame
Post by Hina Moin on LinkedIn	Urban Heat & Deforestation	Removal for Urban Projects, Public Awareness	Sustainable urban planning and awareness are key.	Urban Development Frame

Source	Primary Themes	Sub-Themes	Key Messages	Framing
Post by Faizan Saleem on - LinkedIn	Urban Greenery Loss	Urban Heat, Accountability, Transparency	Accountability needed for urban forest loss.	Governance Frame
Facebook post by Abdul Raheem Lughari -	Illegal Logging & Degradation	Unsustainable Practices, Role of Law Enforcement	Action needed against the tree-cutting mafia.	Governance Frame
Facebook post by Abdul Qadeer Memon -	Widespread Deforestation	Encroachment, Forest Cover Loss	Long-term strategies for sustainable forest management.	Governance Frame
Facebook posts by Ghulam Hussain -	Environmental Degradation	Impact on Health, Government Inaction	Conservation and intervention are essential.	Public Health Frame
Facebook post by Altaf Shakoor -	Lack of Urban Greenery	Air Quality, Heat Island Effect	Karachi needs urgent urban greening solutions.	Urban Development Frame
Facebook post by The Financial Daily -	Environmental Concerns	Urban Heat, Air Quality	Unsustainable development impacts public health.	Public Health Frame
YouTube video posted by Sir Nofil's Academy -	Ecosystem Degradation	Habitat Loss, Mangrove Significance, Policy Failure	Mangroves are ecologically and economically vital.	Environmental Justice Frame
YouTube video posted by Inshan Atta -	Severe Deforestation	Encroachment, Illegal Logging, Climate Change	Sindh's forest cover loss requires immediate action.	Crisis Frame
YouTube video posted by SM Short Hand Institute -	Forest Degradation	Government Oversight, Political Impact	Advocacy and judicial action can make a difference.	Governance Frame
Blog written by Imdad Soomro -	Illegal Encroachment	Judicial Measures, Role of Government	Comprehensive solutions with community involvement.	Governance Frame
Blog written by Zulfiqar Kunbhar - title: environmental damage due to illegal tree logging in Sindh	Illegal Tree Cutting	Public Concern, Enforcement Failure	Temporary measures fail without long-term enforcement.	Governance Frame
Blog written by Jamal Khurshid Title: Tree Plantation project in the city	Sustainable Development	Judicial Action, Urban Greenery	Environmental protection must align with urban policies.	Governance Frame
Facebook post by PQT -	Environmental Sustainability	Resource Needs, Community Goals	Community engagement and tools for tree care are vital.	Environmental Justice Frame

Findings and Discussion

Table 2

Collective Themes Table: Deforestation in Sindh

Primary Theme	Sub-Themes	Frequency (No. of Posts)
Widespread Deforestation	Illegal Logging, Encroachment, powerful actor's role.	XII
Environmental Degradation	Change in climate, Loss in Biodiversity, Soil Erosion	VIII
Role of Government Failure	Corruption, weakness in policy, Lack of Enforcement	IX
Climate Change & Urban Heat	Urban Vulnerability, Green spaces removal, Urbanization	VII
Need for Urgent Action	Involvement of community , Advocacy, Immediate Strategies	X
Mangrove and Ecosystem Loss	Habitat Destruction, Urban/Industrial Impact, Ecological Value	IV
Sustainable Solutions	Reforestation, Indigenous Knowledge, Policy Reforms	VI

Discussion

This study reveals the multi-dimensional and linked nature of deforestation in Sindh. The findings highlight a unbelievable loss of forest cover, caused by illegal logging networks, agricultural development, and urban violation, often occurring with little regard for environmental principles. These activities have drastically reduced forested areas, posing a severe ecological threat.

The environmental effects are massive. Loss of forest cover has upset ecological balance, leading to soil erosion, agricultural degradation, increased flood risk, and water scarcity. Moreover, deforestation work as an add on to climate change through the release of stored carbon dioxide, intensifying global warming, changing rainfall patterns, and increasing the occurrence of extreme weather events.

Urbanization has also played an important role by replacing all the greenery with infrastructure, contributing to the urban heat island effect specifically in cities like Karachi intensifying heat stress, air pollution, and public health affairs.

Mangrove degradation on Sindh's coast further complexes the crisis. These ecosystems are essential for coastal protection, marine biodiversity, and livelihoods. However, they are under threat from industrialization, pollution, and climate change, putting sectors like fisheries and tourism at risk.

Lastly, the study highlights the crucial role of citizen journalism in focusing deforestation. Citizen reporters raise awareness, mobilize communities, and influence policy by documenting and distributing real-time environmental issues. Their efforts bridge the gap between grassroots realities and established responses, positioning them as vital agents in environmental advocacy.

Validation

To ensure validity as well as reliability of the data triangulation is used in the current research. By matching as well as corroborating patterns from more than a single perspective, triangulation as a method involving multiple points of data makes the assumptions more acceptable. Data for the research were from the variety of citizen journalism sites such as YouTube, Facebook, LinkedIn, as well as from blogs. Greater awareness of the framing of the issue of the environment as well as Sindhi deforestation was enabled through these multiple points. Triangulation helped me identify the presence of the themes in these multiple locations. Of these a number highlighted the issue of the issue of urbanization, illegal deforestation as well as the climatic changes, for example, which seemed to corroborate their relevance as recurring topoi in the story of the environment. Validity of established themes was checked through cross-referrals across the forms of the data.

Moreover, it was also unavoidable as a matter of validity, since nobody else but myself conducted the research, since the themes proved not to be limited to any single medium. Having used multiple resources, from the likes of blogs, social networks, through YouTube videos, provided a more extensive view of the issue, thereby enhancing the validity of the analysis as well as the confidence of the results.

Ethical Issues

This study has been undertaken Using publicly available citizen journalism content, like blogs, Facebook statuses, LinkedIn statuses, and YouTube videos, we explored how the online narratives regarding the issue of deforestation as well as the environment in the province of Sindh have been framed. In the process of gathering the content, no ethical issue arose as the data being gathered were publicly available. even so the following moral principles have been commented:

Acknowledgment of Intellectual Property

Data used in the current study have been gathered from the original authors. Most notably, credit is given as the content blogs, tweets, and videos have been authored by individuals who have put their views about the issue of the environment of Sindh as well as the loss of the woods. For the adequate citation and thus the reference, these authors have been invoked as is their right. This is because they have been given the acknowledgement for their work in the field of the environment, as well as their intellectual property being safeguarded.

Privacy and Anonymity

There was no issue of privacy with the creator or the material because the material was available for all humans.

Fair Representation

Data analysis was conducted on the data supplying the creators' writing, with the aim of presenting the creators' stories and views without changing the creators' context or intended meaning. In keeping with the aim of maintaining the writers' intended meaning as well as representing the concerns they raised correctly, all the quotations as well as the paraphrased content were treated with care. This was undertaken with the aim of maintaining the validity of the analysis from the outset in a bid to avoid the misrepresentation or wrong interpretation of the content.

Transparency and Integrity

The methodology used in the research, the gathering of the data, as well as the analysis, all took place in the transparent and honest fashion, with the results being strictly limited to the material available through the present point in time and being free from the control of the researchers' biases or their misperception of their research. Keeping the research process as transparent as possible preserves the validity of the analysis as well as the assurance of how the results can be reached.

Scope and Limitations

This research is rooted in the prominent role of citizen journalist in the process of constructing and sensitization regarding the problem of deforestation how they construct the problem and how they engage in sensitization regarding the problem. It encountered the ways the various platforms like social sites (Facebook, LinkedIn, YouTube), blogs, online forums, are being used by citizen journalists in constructing and disseminating the word regarding the problem of deforestation.

The study explores how the stories contribute toward the multidimensionality of the issue of deforestation, with the problem having social, as well as economic, ramifications. It describes how citizen reporters frame the issue of deforestation as a matter of the concern of the people involving the powerful actors as well as the shortcomings of the government, active citizen participation, as well as sustainable solutions.

By analyzing the content as well as the scale of these citizen journalistic reports, the research aims at grasping their impact upon popular opinion, mass action, as well as their role in a larger popular discourse regarding the environmental issues of Sindh. This research will demystify the role of the citizen in this realm as much as the role of the citizen as a method of grasping the dynamic interaction amongst the media and the environment, the role of the media in green movements, as well as citizen journalism as a force for social as well as ecological change in the case of Sindh.

Future research would be able to examine the question of whether any of these same factors in citizen journalism contribute to other ecological threats such as water shortages, air quality or other threats other than deforestation. Cross-national research would also be able to give a more extensive overview of citizen journalism efforts and effects. Longitudinal research can also provide more insights about the long-lasting impact of citizen journalism upon policy and people's behavior.

Limitations of the Study

Regardless of the scope, the research is prone to certain overall shortcomings which cannot be avoided. Research is of a geographical region, which is from a single region of the province of Sindh, Pakistan, since the research is trying to compile areas, societies, as well as political landscapes which are absolutely different from one another, thus being the least comparable. Additionally, the research's area of focus narrowed down just to citizen journalism alone, the students have conducted research upon the user-generated postings, the blogs as well as any other citizen-generated content purposed for informative use. All contributions from professional reporters, any mass media, or other green movement efforts are omitted which makes the analysis highly skewed and limited. Additionally, citizen-generated input is not

the only input under grassroots triangulation to be explored here because it is based upon accessible citizen journalism from the public sphere which doesn't capture the experience of people who don't put down their experience or spread their work through more informal mechanisms. Lastly, with deforestation there also other pressing ecological concerns like water shortage, contamination or climatic change which can undermine the opinion or movement of the people.

References

- Abbasi, H. U., Baloch, M. A., & Memon, A. G. (2011). Deforestation analysis of riverine forest of sindh using remote sensing techniques. *Mehran University Research Journal of Engineering & Technology*, 30(3).
- Ali Raza Rizvi, N. A. (2004). *Sindh State of Environment & Development*. Karachi. Rosette Printers,.
- Allen, J. C., & Barnes, D. F. (1985). The causes of deforestation in developing countries. *Annals of the Association of American Geographers*. Association of American Geographers, 75(2), 163–184. <https://doi.org/10.1111/j.1467-8306.1985.tb00079.x>
- Anderson, A. (2009). Media, politics and climate change: Towards a new research agenda. *Sociology compass*, 3(2), 166–182. <https://doi.org/10.1111/j.1751-9020.2008.00188.x>
- Barua, S. K., Uusivuori, J., & Kuuluvainen, J. (2012). Impacts of carbon-based policy instruments and taxes on tropical deforestation. *Ecological Economics: The Journal of the International Society for Ecological Economics*, 73, 211–219. <https://doi.org/10.1016/j.ecolecon.2011.10.029>
- Bhatti, A. M., & Keerio, G. R. (2000, April). Trend of forestry research in Sindh using 50, years in Sindh. In *Proceeding of national seminar “perspectives of forestry in millennium* (Vol. 3, p. 94).
- Bodo, T., Gimah, B. G., & Seomoni, K. J. (2021). Deforestation and habitat loss: Human causes, consequences and possible solutions. *Journal of Geographical Research*, 4(2).
- Boykoff, M. T. (2007). Media coverage of climate change: Current trends, strengths, weaknesses. *Human development report, 2008*.
- Boykoff, M. T. (2009). We speak for the trees: Media reporting on the environment. *Annual review of Environment and Resources*, 34(1), 431–457. <https://doi.org/10.1146/annurev.environ.051308.084254>
- Brüggemann, M., & Engesser, S. (2014). Between consensus and denial: Climate journalists as interpretive community. *Science Communication*, 36(4), 399–427. <https://doi.org/10.1177/1075547014533662>
- Carlson, K. M., Curran, L. M., Ratnasari, D., Pittman, A. M., Soares-Filho, B. S., Asner, G. P., ... & Rodrigues, H. O. (2012). Committed carbon emissions, deforestation, and community land conversion from oil palm plantation expansion in West Kalimantan, Indonesia. *Proceedings of the National Academy of Sciences*, 109(19), 7559–7564.
- Climate change education initiative launched. (2024). The Express Tribune.
- Collins, P. (2021, August 2). *Deforestation: definition, facts, causes and consequences*. Climate Consulting Selectra: <https://climate.selectra.com/en/environment/deforestation>
- Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the national academy of sciences*, 111(supplement_4), 13614–13620. <https://doi.org/10.1073/pnas.1320645111>
- Deforestation causing rural to urban migration: report. (2021, July 5). The Express Tribune. <https://tribune.com.pk/story/2308879/deforestation-causing-rural-to-urban-migration-report>
- do Carmo Galiazzi, M., Paula Salomão de Freitas, D., Aguiar de Lima, C., da Silva Cousin, C., Langoni de Souza, M., & Launikas Cupelli, R. (2018). Narratives of learning communities in environmental education. *Environmental Education Research*, 24(10), 1501–1513. <https://doi.org/10.1080/13504622.2018.1545152>
- Forests. (n.d.). WWF: https://www.wwfpak.org/our_work_/forests/
- Forsyth, T. (2003). *Critical Political Ecology The politics of environmental science*. USA and Canada: Routledge . <https://www.fao.org/interactive/forest-resources-assessment/2020/en/>
- Jurrat, N. (2011). *Mapping Digital Media: Citizen Journalism and the Internet*. Opensocietyfoundations.org. <https://www.opensocietyfoundations.org/publications/mapping-digital-media-citizen-journalism-and-internet>
- Köthke, M., Leischner, B., & Elsasser, P. (2013). Uniform global deforestation patterns — An empirical analysis. *Forest Policy and Economics*, 28, 23–37. <https://doi.org/10.1016/j.forpol.2013.01.001>
- Marisa Dispensa, J. (2003). Media’s Social Construction of Environmental Issues: Focus on Global Warming—A Comparative Study. *International Journal of Sociology and Social Policy*.
- McCombs, M. (2011). *The news and public opinion: Media effects on civic life*. Polity.
- Morgan, M. S. (2017). Narrative ordering and explanation. *Studies in History and Philosophy of Science Part A*, 62, 86–97. <https://doi.org/10.1016/j.shpsa.2017.03.006>

- Morris, B. S., Chrysochou, P., Christensen, J. D., Orquin, J. L., Barraza, J., Zak, P. J., & Mitkidis, P. (2019). Stories vs. facts: triggering emotion and action-taking on climate change. *Climatic Change*, 154(1–2), 19–36. <https://doi.org/10.1007/s10584-019-02425-6>
- Nisbet, M. C. (2009). What's next for science communication? Promising directions and lingering Distractions. *American Journal of Botany*.
- Nisbet, M. C., & Mooney, C. (2007). Science and Society. Framing Science. *Science*, 316.
- Nunez, C. (2022, December 7). *Why deforestation matters—and what we can do to stop it*. National Geographic; National Geographic. <https://www.nationalgeographic.com/environment/article/deforestation>
- Okia, C. A. (2012). *GLOBAL PERSPECTIVES ON SUSTAINABLE FOREST MANAGEMENT*. Croatia: InTech.
- Pan, Y., Birdsey, R. A., Fang, J., Houghton, R., Kauppi, P. E., Kurz, W. A., ... & Hayes, D. (2011). A large and persistent carbon sink in the world's forests. *science*, 333(6045), 988–993. <https://doi.org/10.1126/science.1201609>
- Siyal, D. A. (2023). *Sindh's shrinking forests*. Dawn. <https://www.dawn.com/news/1750285>