

Framing Analysis of Climate Change Communication on Digital Media Portals -Down To Earth and Carboncopy

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Abstract

Climate change has become one of the most challenging global problems with serious consequences, and media coverage plays a pivotal role in shaping public perception and awareness. The way the most pressing problem is reported by media that is the how they frame and in which tone they portray the matter, shapes public perception and policy discourse. This study examines the framing of climate change in two Indian digital portals, Down To Earth and CarbonCopy, over a six-month period from January to July 2025.

Content analysis approach has been used to carry out the research and investigate how articles and news stories have constructed the issue through four frames: Problem, Solution, Responsibility, and Justification by the two portals. The study further categorizes the tone of reporting as alarming, neutral, or informative to assess how each outlet influences public engagement and perception.

Descriptive statistics had been used to summarize frequency distributions, while chi-square tests examined associations between frames, tone, and portal. The findings indicate that *Down To Earth* predominantly employs solution frame with an alarming tone, emphasizing environmental accountability and policy implications, whereas *Carbon Copy* tends to highlight problem frames with an alarming, neutral or positive tone. The study contributes to understanding media framing theory in the Indian digital context.

Keywords: Climate Change, Content Analysis, Carbon Copy, Down To Earth, Media Framing, Tone

Introduction:

Climate change has become a pressing problem since last few decades, the consequences of which are being experienced as extreme weather condition like rising temperatures, heavy rain and flood and drifting ecosystems. It is not only affecting the environment adversely; it has also economic, political cultural and social, impacts. The most populous country like India is one of the most vulnerable to climate change, facing serious risks from rising temperatures, extreme weather, and changes in energy use and to cope with it participatory approach is required.

These risks go beyond scientific discussions or international talks, policy drafting; they require clear communication to raise awareness, encourage, and support local adaptation where the role of media becomes very crucial. As a critical means for conveying scientific information to the public (Funk et al.,

2017), the media is also indispensable for cultivating public understanding and knowledge of climate change (Schmidt et al., 2013).

The fact is that the reporting on environmental issues are likely to be challenging for journalists because of the complexity and gradual and unnoticeable nature of these phenomena (Ahmed, 2025; A. Sharif & Medvecky, 2018). The media, across all platforms-whether it's television, radio, or social media are constantly addressing these issues for raising awareness among people prioritizing political, sensational and human interest issues and reporting of climate change is minimal. The study conducted by Billett (2009) reports that Indian press are covering only the international summits, high-level policy discussions, or natural disasters and presenting climate change as a global issue, stressing the responsibilities of developed countries. Boykoff (2011) opined that usually media follow a conflict format, misrepresenting on going issues such as climate change.

This highlights the importance of checking whether digital-native portals offer more continuous and contextual reporting. It is required to assess if digital media outlets in India provide more inclusive, on-going, and justice-focused climate communication compared to mainstream narratives.

Rationale for the Study

Media play a pivotal role in creating awareness among public about matters concerning climate change. Though substantial researches have been conducted on global climate change communication, researches in India are still limited and fragmented. Existing studies primarily examine mainstream print or broadcast media, often overlooking specialized digital platforms. Recent studies suggest that digital platform might better address gaps: deeper issue-focus, data support, local narratives, and diversified sourcing.

Addressing these gaps, the present study analyse the six months **content** of two leading Indian digital environmental portals- Down To Earth and CarbonCopy. It focuses on how these digital environmental platforms are framing climate change, and the tones they are adopting,

Down To Earth (DTE)

Centre for Science and Environment is an esteemed Indian platform focusing on science and environmental news. It started its fortnightly magazine Down To Earth in 1992 addressing climate change connecting with health, agriculture, policy, social justice, and community experiences. The intersection of journalism with policy analysis, human interest stories and data visualization supported by intensive qualitative and quantitative research provides deep and comprehensive insights of environmental problems.

Carboncopy

Carboncopy is a portal was started in 2017 for communicating environmental issues in an engaging manner. This platform focuses on carbon regulations policy, monitoring climate finance, energy transitions, and governance matters. Its reports are aimed for knowledgeable audiences and stakeholders looking for legislative and systemic aspects of climate action.

Objectives of the study

The specific objectives of this research are:

1. To analyse the framing in Down To Earth and Carboncopy in terms of problems, solutions, responsi-

bility, and justice.

2. To assess the dominant tones (alarmist, neutral, optimistic/solution-oriented) in their reporting.
3. To examining whether all framing styles are equally being used by (Carboncopy, Down to Earth)
4. To examining whether all tone styles are equally being used by (Carboncopy, Down to Earth)
5. To study the association between framing styles and the news portals.
6. To study the association between tone styles and the news portals.

Theoretical frame work and Research Design:

Content analysis has been used to carry out the research and identifying framing and tones of the climate change communication on two major environmental portal, the Down To Earth and the Carboncopy.

Frame Analysis, a theoretical and methodological approach is based upon the seminal work of Erving Goffman (1974) entitled "*Frame Analysis: An Essay on the Organization of Experience*". It is how a particular aspect of climate crises is emphasised to shape understanding. Frame analysis, as stated by Schäfer et. al., (2017) is "emphasizing certain aspects of climate change to shape public understanding has become a key approach in climate communication research despite being considered a "fractured paradigm" due to varied applications". In media and communication studies, Frame Analysis helps to explain how media select certain aspects of reality and present them in ways that influence audience perception and interpretation.

The present study has used Entman's (1993) Framing Functions - Problem definition, Responsibility, Treatment Recommendation, and Justice/ moral which are widely used in environmental framing studies.

1. **Problem Definition** identifies the issue is being discussed or highlighted.
2. **Solution Frame/Treatment Recommendation** suggests how the issue can be addressed or solved.
3. **Responsibility Frame/Causal Interpretation** reflects who or what is held responsible - government, public, corporations, etc.
4. **Justice Frame** means fairness, equity, and social justice dimensions of the issue.

Tone Analysis (or sentiment analysis) means orientation of a message – conveying positive, negative, or neutral attitude toward a subject or issue.

Tone analysis is crucial because the emotional direction of a message influences how audiences interpret, judge, and responds to information. The present study used following tones

1. **Alarmist Tone:** Fear, urgency, crises and threats are emphasised in this tone creating awareness by highlighting dangers or catastrophic consequences.
2. **Informative Tone:** This type of tone provides hope, progress or optimistic side of the story.
3. **Neutral Tone:** It is balanced and factual and balanced representation of the issue without any judgement.
4. Content analysis technique has been used to identify framing and tone on both the portals.

Content analysis technique has been used to identify framing and tone on both the portals..

Sample: Two renowned portals -The Down to Earth and The Carboncopy have been examined for Six months period of January 2025–August 2025and 31 communication of each is found on climate change. The study specifically focuses on framing of climate communication and the tone they are using in their public messaging.

For analysing the data, SPSS 20 has been use and Chi square test has been conducted to examine whether the distribution in framing styles and tones are equal or not. Further the same test has been used

to compare the communication of two portals.

Literature Review:

Research on climate change communication and framing analysis has evolved significantly over the past two decades. Numerous research studies have been carried out on climate change communication and their media framing strategies and overall tone and significant patterns across different contexts and methodologies have been revealed.

In a chapter of Oxford Encyclopaedia of Climate Change Communication, Mike S Schafer (2017) opined framing in communication is making certain aspects of an issue more salient. According to them frame analyses is one the most researched in climate change communication, using formal framing approaches (e.g., episodic vs. thematic framing) to topical frames (both generic and issue-specific).

Among main stream media Raza et al., (2025)revealed varying coverage intensities with the Times of India having the highest climate-related content at 54.7% and the most dominant frame appearing in 35.9% of examined articles across major nationalswere "Attribution of Responsibility" .

Boora & Karakunnel, (2023) reported that Indian news portals demonstrated a mix of framing approaches, ranging from business-focused in mainstream to more critical analyses in independent portals like Scroll and The Wire.

Lück et al., (2018) in their study found the complexities of national and transnational influence on international journalism by distinguishing “convergent issue framing from nationally specific narrative in news texts. In a comparative quantitative content analysis of the newspaper coverage in five democratic countries (Brazil, Germany, India, South Africa, and USA) during four UN climates change conferences from 2010 to 2013 both textual-visual framing and narrative features were studied simultaneously for the first time. The narrative dimension consisted of variables that gauge (a) the degree of narrativity in an article, (b) the type of narrative (i.e. stories of catastrophe, conflict, success etc.), and (c) narrative roles of victims, villains and heroes”. Framing and dominant narrative were identified using cluster analysis and the result shows a high degree of international uniformity in issue frames, but narratives are more influenced by national cultural and political contexts.

Mutyala et al. used content analysis method and framing theory to study 278 stories published by four leading newspapers of Us and India during Paris Climate Conference also known as “COP21” revealed that international politics-oriented conflict and strategy frame and environmental consequences frame dominated both U.S. and Indian newspaper coverage. Further they reported that Indian newspapers provide more information on environment-friendly, initiatives and social progress and innovations.

Meta -analysis by Li & Su (2018) showed positive impact of framing on public engagement with climate change. They further reported that economic, environmental and moral framing showed small to medium impact while geographical identity and public health frames showed minimal influence.

Badullovich et al., (2020) conducted systematic analysis of 274 articles reported the scientific, economic, and environmental topics are the most common frames in the literature, but public health, disaster, and morality/ethics frames are becoming more frequent. Research is also moving beyond the US to include more multinational studies.

Hypothesis:

Hypothesis 1

Ho: All framing style in terms of problems, solutions, responsibility, and justice are equally likely in Do-

wn To Earth.

Ha: All framing style in terms of problems, solutions, responsibility, and justice are not equally likely in Down To Earth

Hypothesis 2

Ho: All framing style in terms of problems, solutions, responsibility, and justice are equally likely in Carboncopy.

Ha: All framing style in terms of problems, solutions, responsibility, and justice are not equally likely in Carboncopy.

Hypothesis 3

Ho: All tone types (Alarming, Informative, Neutral /Calm) are equally likely in Down to Earth.

Ha: All tone types are not equally likely in Down to Earth.

Hypothesis 4

Ho: All tone types (Alarming, Informative, Neutral /Calm) are equally likely in Carboncopy.

Ha: All tone types are not equally likely in Carboncopy.

Hypothesis 5

Ho: There is no significant association between framing style and news portal (Carboncopy, Down to Earth).

Ha: There is a significant association between framing style and news portal (Carboncopy, Down to Earth) .

Hypothesis 6

Ho: There is no significant association between news portal (Carboncopy, Down to Earth) and tone type (Alarming, Informative, and Neutral).

Ha: There is a significant association between news portal and tone type.

Data Analysis:

1. Analysis of framing in terms of problems, solutions, responsibility, and justice in Down To Earth and Carboncopy climate change

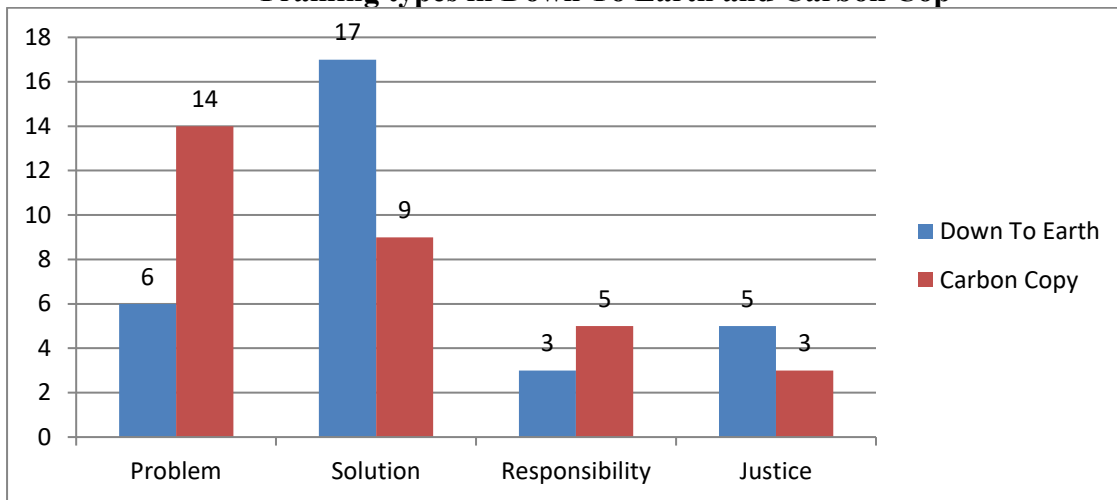
The Table No 1 shows that Down To Earth has largely used solution frame (54.8%) that is addressing problems solution followed by problem frame(19.3%) to highlight crises or the consequences while Carboncopy emphasised more on problem frame which is 45.2% followed by solution frame which is 29%.The result is also presented in Graph No 1.

Table No 1

Frequency of framing types in Down To Earth and Carboncopy

Frame Type	Down To Earth		Carboncopy	
	Frequency	Percentage	Frequency	Percentage
Problem	6	19.3%	14	45.2%
Solution	17	54.8%	9	29.0%
Responsibility	3	9.7%	5	16.1%
Justice	5	16.1%	3	9.7%
Total	31	100%	31	100%

Graph No 1
Framing types in Down To Earth and Carbon Cop



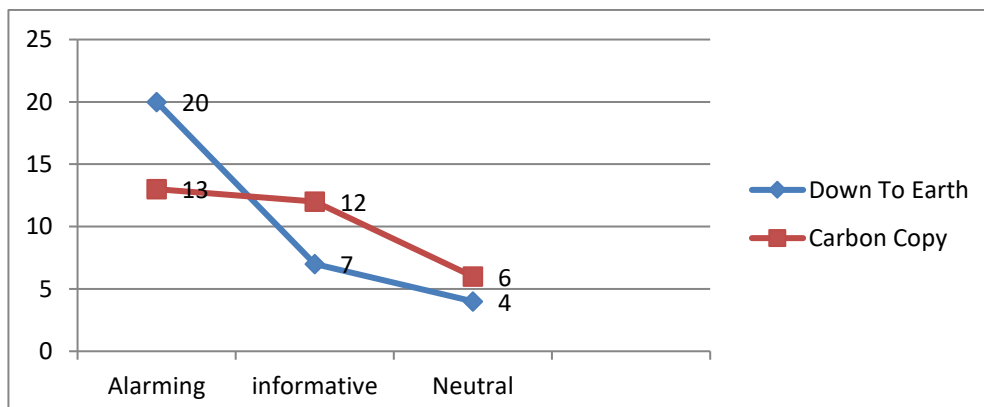
2. Analysis of Tones in terms of Alarming, Informative and neutral in Down To Earth and Carboncopy climate change :

On examining the Table No 2, it has been found that dominant tone in Down to Earth as well as in Carboncopy is alarming which is 64.5% and 41.9% respectively which means these portals are emphasising the crises, dangers and consequences of the climate change issues . It is followed by informative tone (7%) and 38.7 % highlighting optimistic side of issues. The result is also represented in Figure No 2.

Table No 2
Frequency of tone types in Down To Earth and Carboncopy

Tone Type	Down To Earth		Carboncopy	
	Frequency	Percentage	Frequency	Percentage
Alarming	20	64.5%	13	41.9%
Informative	7	22.6%	12	38.7%
Neutral	4	12.9%	6	19.4%
Total	31	100	31	100

Graph No 2 Types of Tones in Down To Earth and Carbon Copy



3. Distribution of framing styles in Down to Earth:

The Table No 3 represents the chi square test for goodness of fit in Down To Earth. This test examines that whether all the framing style has been equally or not.

Table No 3
Goodness of fit Test of Frame in Down To Earth

	Observed N	Expected N	df	Chi Square
Problem	6	7.75	3	15.32
Solution	17	7.75		
Responsibility	3	7.75		
Justice	5	7.75		
Total	31			

The Pearson Coefficient value comes 15.32 which is more than table value at 5% at degree o freedom 3.Hence null Hypothesis 1 is rejected which states that all the framing stles are equally likely.

Chi-Square (χ^2) = 15.32

Degrees of Freedom (df) = k - 1 = 4 - 1 = 3

Critical χ^2 (0.05, df=3) = 7.815

Since 15.32 > 7.815,

And it is concluded that the framing distribution in *Down To Earth* is not uniform- the Solution frame appears significantly more frequently than the others, showing a strong constructive focus in reporting.

4. Distribution of framing styles in Down to Earth:

Similarly the Table No 3 displays the chi square test for goodness of fit in Carboncopy examining the distribution of all the framing style is equal or not. As the Pearson Coefficient Coefficient of the Test is 9.13 which is more the Critical Value , that is 7.815 at degree of freedom 3. Therefore the Null Hypothesis 2 is rejected, stating all framing styles are equally likely.

Table No 4

Goodness of fit Test of Frame in Carboncopy

	Observed N	Expected N	df	Chi Square
Problem	14	7.75	3	9.13
Solution	5	7.75		
Responsibility	9	7.75		
Justice	3	7.75		
Total	31			

Chi-Square (χ^2) = $\Sigma((O-E)^2/E)$ = 9.13

Degrees of Freedom (df) = k - 1 = 4 - 1 = 3

Critical χ^2 (0.05, df=3) = 7.815

Thus it can be concluded that the framing distribution in Carboncopy is also not uniform and the Problem-solution frame is significantly more dominant, showing a tendency to emphasise risks and challenges in environmental reporting.

5. Distribution of Tone styles in Down to Earth:

The Table No 5 reports the distribution of tone style on Down to Earth portal and Chi Square Goodness of Fit test has been performed. On examining the table it has been found that the calculated Pearson coefficient is 14.00 which is more than the critical value which is 5.99. This leads the rejection of Hypothesis 3 which states that all the tones are equally likely in Down to Earth. The distribution of tones (Alarming, Informative, and Neutral) in Down to Earth is not uniform.

Table No 5

Goodness of fit Test of Tone in Down To Earth

	Observed N	Expected N	df (Degree of freedom)	Chi Square
alarming	20	10.3	2	14.00
Informative	7	10.3		
neutral	4	10.3		
Total	31			

Chi-Square (χ^2) = $\sum ((O-E)^2/E) = 14.00$

Degrees of Freedom (df) = $k - 1 = 3 - 1 = 2$

Critical χ^2 (0.05, df=3) = 5.99

The portal shows a significant bias toward an “Alarming” tone, indicating stronger emphasis on urgency or crisis in its climate reporting.

6. Distribution of Tone styles in Carboncopy:

The Table No6 reveals the distribution of tone style on Carboncopy portal for which Chi Square Goodness of Fit test has been carried out. On inspecting the table it has been found that the calculated Pearson coefficient is 2.77 which is less than the critical value at 5% which is 5.99. This rejects the Hypothesis 4 which states that all the tones are equally likely in Carboncopy. The distribution of tones (Alarming, Informative, Neutral) in Carboncopy is likely equal.

Table No 6

Goodness of fit Test of Tone in Carboncopy

	Observed N	Expected N	df	Chi Square
Alarming	13	10.3	2	2.774
Informative	12	10.3		
Neutral	6	10.3		
Total	31			

$\chi^2=2.77,$

df (Degree of Freedom) =2

Critical value at 0.05 = 5.99

Since 2.77 is less than Table value which is 5.99, hence the distribution of tones (Alarming, Informative, and Neutral) in Carboncopy does not differ significantly which suggest that all the three types of tones are used equally in Carboncopy.

7. Association of framing styles Down to Earth and Carboncopy Portals:

Table No 7

Test of Association of Frame with Down To Earth and Carboncopy						
Tones	Down to Earth (Observed)	Expected (Down to Earth)	Carboncopy (Observed)	Expected (Carboncopy)	df	Chi Square Value
Problem–Consequence	6	10	14	10	3	13.24
Justice/Responsibility	3	6	9	6		
Solution/Opportunity	17	11	5	11		
Neutral/Descriptive	5	4	3	4		
Total	31		31			

Chi Square Test of Association has been performed to examine the association of framing style and the two News portals, the Down To Earth and The Carboncopy and the result has been displayed in Table No 7. On examining the table, it is found that the Pearson Coefficient value is 13.24 which is more than the critical value at degree of freedom 3 (5%- 5.99). It again rejects the Hypothesis No 7 stating no association of framing style with the news portals.

$\chi^2=13.24,$

df (Degree of Freedom) =3

The Critical value at 0.05 ($df- 3$) =7.815.

Hence it can be concluded that there is significant association between framing style and news portal. *Down to Earth* articles favour Solution/Opportunity frames while Carboncopy articles more often use Problem and Justice Frames.

8. Association of Tone styles with News Portals - Down to Earth and Carboncopy:

In order to examine the association of tone styles and the two news portals, the Down To Earth and The Carboncopy, the Chi Square Test of Association has been performed.

Table No 7

Test of Association of Tone with Down To Earth and Carboncopy						
Tones	Down to Earth (Observed)	Expected (Down to Earth)	Carboncopy (Observed)	Expected (Carboncopy)	df	Chi Square
alarming	20	16.5	13	16.5	2	3.20
Informative	7	9.5	12	9.5		
neutral	4	5.0	6	5.0		
Total	31	31				

The result has been displayed in Table No 8. On examining the table, it is found that the Pearson Coefficient value is 2.77 which is less than the critical value at degree of freedom 3 (5%- 5.99). It accepts the null hypothesis stating no association of tone style with the news portals. Both Carboncopy and Down to Earth show similar tone distribution in their reporting.

$\chi^2=3.20,$

df (Degree of Freedom) =2

Critical value at 0.05 = 5.99

Since the calculated Chi-square value (3.20) is less than the table (critical) value (5.99) at the 0.05 level of significance with 2 degrees of freedom, the result is statistically not significant. It simply shows that there is no significant association between the tone type and the environmental portals.

Therefore, it can be safely concluded that both news portals exhibit a similar pattern of tone usage in their coverage of climate change–related content, and the tone does not depend on the particular news channel.

Conclusions:

The study clearly shows that the *Down To Earth* portrays climate change issue as a current reality rather than a distant threat. Numerous communications like shrinking Himalayan glaciers, shifting bird habitats, altered river flows, and intensifying rainfall, highlights how the rise in temperatures are changing ecosystems, water resources, and human livelihoods. The overall trend point outs inequalities, uncertainties and greater risks which requires proactive policy and scientific vigilance and strict measures to protect both nature and vulnerable communities.

In Carboncopy's reporting, a hybrid framing approach in environmental journalism has been observed. Integration of various tones like alarmist, neutral, and optimistic with justice and governance-oriented narratives, the portal contributes to a multidimensional understanding of environmental challenges. The study further indicates that environmental media in India does not merely report problems but also contextualizes them within broader structures of power, responsibility, and equity.

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