



## MASS MEDIA AND COGNITIVE INSIGHTS FOR ENHANCING CLIMATE CHANGE KNOWLEDGE

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### ABSTRACT

Communication media play a significant role in shaping attitudes and disseminating knowledge about climate change. The main source of public awareness and understanding of climate change is media communication, specifically coverage in newspapers, radio, television, and online. The researcher conducted quasi-experimental research using qualitative and quantitative research techniques. A qualitative study was conducted with 38 MGNREGA - 100-Day Workers from the District of Thiruvannamalai, while quantitative research included 764 respondents, including both those who are knowledgeable about Climate Proofing and those who have never heard of it. Employees of MGNREGA who work on climate-proofing projects have been discovered to educate those who work on non-climate-proofing projects about the effects of climate change. Employees working on non-climate-proofing projects are then kept informed about climate proofing via news and broadcast media, resulting in the engagement for climate proofing actions. Despite the fact that social media and the Internet have become an integral part of the majority of our lives, rural people have yet to reap the benefits of new media.

**Keywords:** Climate Change Knowledge, Climate Proofing, Mass Media, MGNREGA – 100-Day Workers.

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**DOI Number:** 10.48047/nq.2022.20.8.NQ221015

**NeuroQuantology2022;20(8): 9923-9932**

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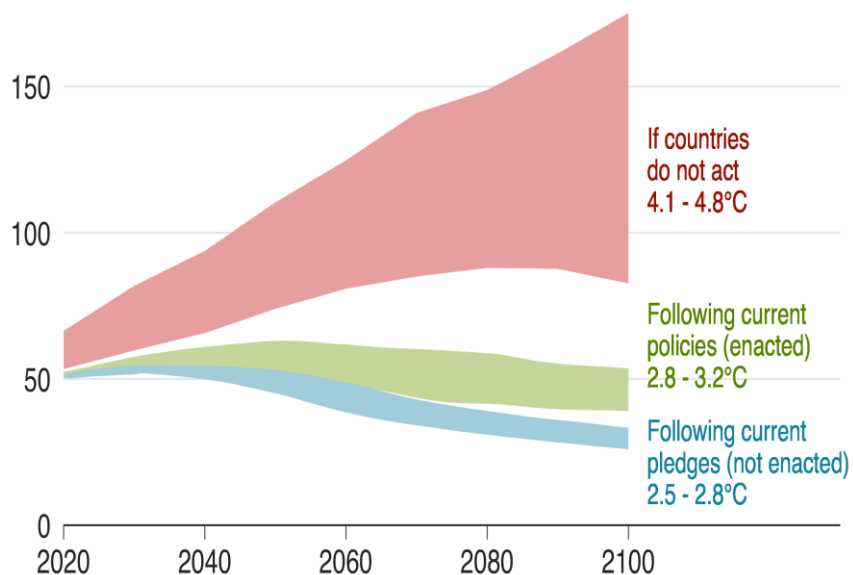
## Introduction

Climate change has a detrimental effect on developing nations (IFAD, 2010). At the local, national, and international levels, climate change is a major threat Fig.1 (Ahchong and Dodds, 2012; Brechin, 2003; Dunlap, 1998) and other multi-nation research have shown that the general public has a poor understanding of the mechanisms behind climate change and that they tend to view environmental problems as being more complex than they actually are. The primary source of public awareness and understanding of climate change is mass media broadcast, newspapers, radio, television, and online (Schäfer, Mike. 2015). However, the way in which climatic data is presented is essential

for conveying knowledge about climate change to both experts and lay audiences. Cognitive and psychological sciences can offer helpful suggestions on how to improve the portrayal of climate data based on our understanding of how the neural network absorbs visual and spoken information (Harold, Jordan et.al. 2016). To transmit information about climate change, various visual channels, such as combinations of shape, colour, size, opacity, and other attributes, as well as different visual modes, such as multimedia elements and static representations, are used. However, expressing climatic information through these particular visual modes and channels might be more challenging, which may affect users' cognition, recognition, and attention (Quiroga et al. 2004).

## How much worse will the problem get?

Emissions\* and expected warming by 2100



\*Emissions are in Gigatonnes of CO2 equivalent

Source: Climate Action Tracker



The effectiveness of media habits, which influences media exposure, the conclusions drawn by specialists, scientific experts, and other evidence-based sources how knowledge of science factors that influence how climate change narratives are perceived, as well as which messages are much more likely to motivate action or prevent failure to act have all been discussed in various ways in the media. It also investigates how audiences interpret contradictory messages about risk and uncertainty, how climate stories compete for people's attention with other topics, how broader political and economic factors influence news production, and how the media can educate the public about environmental issues (Swain, K.A. 2017). More than ever, a quality-guaranteed climate service that can help with both adaptation and mitigation strategies for climate change and volatility is required. A quantitative or qualitative method to analyzing climate data visualizations is currently necessary because perception alone cannot guarantee that a climate data visualization performs as expected by the climate scientific community (Terrado, M., Calvo, L. et.al.2022).

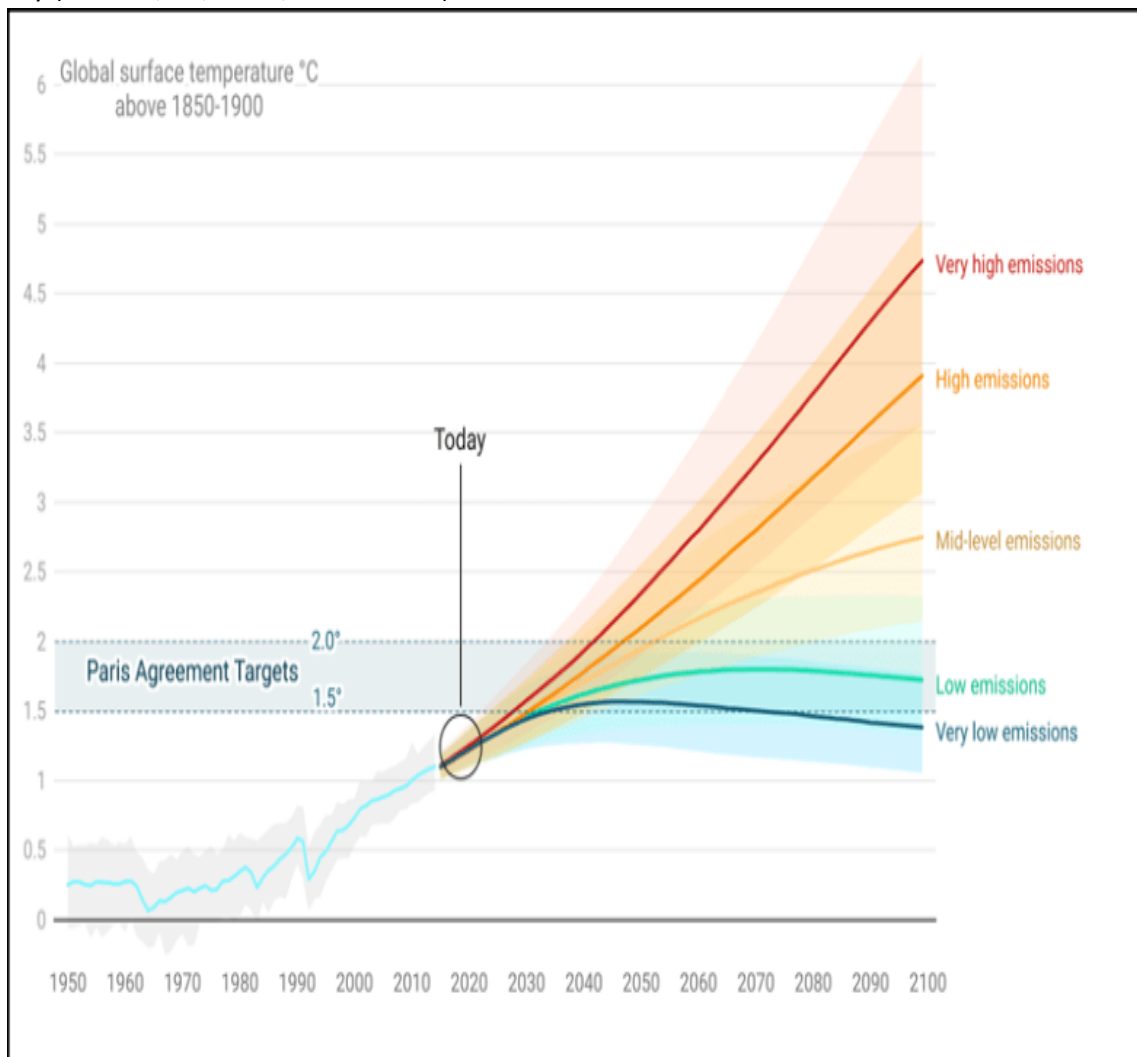


Fig 2: Future Warming Pathways



The relationship between cognitive (knowledge of climate change), affective (affective dimensions like concern, danger perceptions, and imagery), and behavioral (such as behaviour intention and reported behavior in the mitigation) factors is not logical. The primary environmental concern of our day is climate change, which has profound effects on the ecology, the food security, and world health (IPCC 2014). The depletion of fossil fuels, as well as other human-caused activities such as deforestation, increased the concentration of greenhouse gases in the atmosphere, resulting in an increase in temperature (Fig 2) (Rubenstein, 2010). The media is crucial for spreading information and forming opinions on climate change (Eveland & Cooper, 2013). In nations like the U.S., where fair reporting is valued, opposing viewpoints on climate change are frequently featured, regardless of whether they carry equivalent scientific credibility (Casper, 2010). Due to this, a cognitive bias that deviates from the scientific consensus develops (Boykoff & Boykoff, 2004). As a result, climate change deniers receive extensive coverage in the news media, despite the fact that their arguments lack scientific support (Hoffman, 2011). Despite the fact that the press is frequently regarded as a critical source of knowledge for the general public about scientific issues, little research has been conducted on the impact of media depictions of climate change on viewer perceptions, attitudes, and behaviours (Nelkin, 1987).

### **Theoretical Background**

The manner in which the issue is presented in the media has a significant impact on how important it is perceived to be and how eager people are to take action (Myers TA,

et.al.2012). Future research will enable us to better comprehend the communication tactics that have the greatest impact on behavior modification (Lorenzoni I, et.al.2007). According to two media impact studies, for example, framing climate change as a public health issue rather than an environmental issue would increase public engagement (Maibach EW et.al. 2010).

**RQ1:** How the media framing influence people to gain climate change knowledge?

The Media Richness Theory (MRT) specifically addresses how the medium of choice influences the effectiveness of communication (Straus, 1997). Trevino, Lengel, and Daft (1987) have developed as a result of research about organizations. In this study, managers were asked which media they prefer for organisational communication. Three distinct types of reasoning were used to examine the results: situational, symbolic, and substance (message clarity) (other reasons). According to the media richness hypothesis, effective communication is crucial because it decreases ambiguity and uncertainty, which increases the effectiveness of information transmission (Kishi, 2008; Sun & Cheng, 2007). Researchers have created rankings for media richness to try and categorize channels that could be viewed as better than others MRT demonstrates that the sender's selection of the communication medium affects how the message is transmitted and how the recipient will interpret it. Additionally, according to semiotics, there must be a point of agreement for the message to be effectively received and comprehended. According to Jones et al. (2011), mental models are "considered as a cognitive framework that serves as the



foundation for thinking, decision-making, and, with the restrictions also noted in the literature on attitudes, conduct" (p. 1). Different people interpret semiotic signals differently depending on their experiences, and mental models are created from real-world experiences.

**RQ2:** What is the choice of media by rural people to get climate change knowledge?

**Research Methods:**

Based on Morgan table, the sample size was determined. (Robert V.Krejcie and Daryle W. Morgan 1970). In order to evaluate respondents' understanding of climate change adaptation and the role of the media in spreading information about it, this study included 384 MGNREGA workers who were not involved in climate proofing and 380 MGNREGA

- 100-Day Workers who were involved in climate proofing projects from the District of Thiruvannamalai (Table 1). The researcher did quasi-experimental research using qualitative and quantitative research methods. Qualitative research was conducted with 38 workers and quantitative research was conducted with 764 respondents. A brief focus group interview was conducted with the respondents in their regional language for data collection. Based on the focus group interview with rural people, the MGNREGA - 100-Day Workers and discussion with experts working in Mahatma Gandhi NREGAS, the researchers structured the interview schedule for quantitative research. The research was conducted from May 2021 to Dec 2021

**Table 1**  
**Sample Size Determination**

Project	No. Of Active MGNREGA Workers
Climate Proofing	16735
Non-Climate Proofing	149039

Source:[https://nrega.nic.in/Nregahome/MGNREGA\\_new/Nrega\\_home.aspx](https://nrega.nic.in/Nregahome/MGNREGA_new/Nrega_home.aspx)

**Results and Discussion**

**Demographic Profile**

The demographic profiles of the respondents were associated with the cognitive on climate change knowledge. The respondents' age, marital status, gender, educational level, income, satisfaction on number of working days and wages, socio-economic statuses were noted. The researcher gave equal weightage to both male and female in both the workers

working in climate proofing and non-climate proofing projects. In climate proofing and non-climate proofing projects, the majority of the workers are between the age group of 36-55 years. The majority of the MGNREGA – 100 days workers were from Scheduled Caste in the study area was married and had studied up to 5<sup>th</sup> Std.



### Socio Economic Status of MGNREGA - 100 days workers

In climate proofing and non-climate proofing projects, majority of the respondents had own houses and it is pucca houses. Also respondents had land less than 10 cents. The majority of the respondents had 5-6 members in their families with 2-3 earning members in their families.

### Opinion about MGNREGA - 100 days work scheme

The majority of the respondents were dissatisfied about MGNREGA number of working days dissatisfied about the wages provided under MGNREGA. Majority of them usually worked for 76-100 days in a year and joined as MGNREGA worker due to wages guaranteed. Workers opined that this scheme helped improve their sustainability. Majority of MGNREGA workers' total monthly family income was between Rs.5001 to 10000 per month and it is not have sufficient income to lead their family. After 100 days work majority used to go for agriculture work.

**Table 2 Influence of media framing on climate change knowledge**

Media Framing	Mean Score	
	Climate Proofing	Non-Climate Proofing
Real Frame	3.76	3.72
Action Frame	3.35	3.29
Cause Frame	3.67	3.58
Impact Frame	3.54	3.47
Economic Frame	3.33	3.21
Health and Safety Frame	3.41	3.36

### Influence of the media framing to gain climate change knowledge

The process through which individuals "create a specific understanding of a subject or reframe their thinking about an issue" is referred to as framing (Chong and Druckman, 2007, p. 102). Selection and salience are two essential components of framing. Therefore, framing entails choosing a few crucial characteristics of the subjective perception and emphasizing them throughout communication (Entman, 1993). The influence of media framing plays a vital role in creating knowledge on every concept especially on climate change. Based on the mean score (Table 2), MGNREGA climate proofing workers opined that the 'real frame' influences more about framing in which different media present Climate Change as the real problem happening in the world due to climate change and are very curious about the cause and its impact on the issues in the current situation and in the future.

### Choice of media for climate change knowledge

The scientific industry has long recognized the media's importance in spreading awareness of climate change. There are proceedings texts in the area, which including Moser's (2010) nineteenth century of climate change communication, which includes both mainstream media and unconventional modes of communication. In addition to the current literature, the researcher examined the media sources used to spread information on climate change. The MGNREGA - 100 days workers working in climate proofing projects received clear knowledge about climate change through inter-personal communication from government officials, climate scientists, and



field workers, according to the mean score (Table 3). Because they have been working on the project for several years, the workers are receiving updated knowledge from the officials involved in the climate proofing project. Then the rural people working in climate proofing projects acquired knowledge on climate change from Inter-Personal Communication (Family, Friends and Colleagues), and News Media and Broadcast Media. Whereas the MGNREGA – 100 days workers working in non-climate proofing projects got knowledge about climate change through Inter-Personal Communication (Family, Friends and Colleagues). Since P value is less than 0.01, null hypothesis is rejected at 1 per cent level with regard to climate proofing workers and non-climate proofing workers with Inter-Personal Communication (Family, Friends and Colleagues), Inter-Personal Communication (Govt. officials, climate scientists and field workers), print media, news media and broadcast media. Hence there is significant difference between climate proofing workers and non-climate proofing workers with Inter-Personal Communication (Family, Friends and Colleagues), Inter-Personal Communication (Govt. officials, climate scientists and field workers), print media, news media and broadcast media. Since p-value is greater than 0.05, null hypothesis is accepted at 5 per cent level with regard to climate proofing workers and non-climate proofing workers with new media, folk media, visual arts and outdoor media. Hence there is no significant difference between climate proofing workers and non-climate proofing workers with new media, folk media, visual arts and outdoor media. It shows that the MGNREGA workers working in climate proofing projects are sharing their knowledge

on climate change to the workers working in non-climate proofing projects. Then the workers are updating themselves about climate proofing through News Media and Broadcast Media. It is observed that even social media and internet became part of majority of our life but still it not reached the rural people for gaining knowledge from new media.

**Table 3 Mass media and cognitive insights on enhancing climate change knowledge**

Choice of media	Climate Proofing	Non-Climate Proofing	t-value	P Value
	Mean	Mean		
Print Media	3.81	3.65	1.573	0.010**
Broadcast Media	4.14	3.92	1.986	0.003**
News Media	4.24	4.01	1.871	0.002**
New Media	2.79	2.71	0.752	0.219
Folk Media	3.71	3.54	1.114	0.126
Visual Arts	3.94	3.79	1.235	0.187
Outdoor Media	3.51	3.33	0.966	0.203
Inter-Personal Communication (Family, Friends and Colleagues)	4.62	4.51	1.991	0.001**
Inter-Personal Communication (Govt. officials, climate scientists and field workers)	4.73	3.45	2.017	0.001**

### Conclusion

The way that climate change has been portrayed in the media has significantly influenced both solitary and collective attempts to counteract it through production, solitary media consumption, and solitary participation. The way that information about climate change is presented in the media includes details about its effects, aspects of news coverage, the influence of claim-makers, the variables influencing scientists and other data sources, the significance of science knowledge in attempting to perceive climate change news, and specific messages that either inspire action or cause inaction. It also looks at how news about climate change competes with other issues for the public's attention, how audiences



process contradictory information regarding uncertainty, how general political and economic factors influence media development, and how the press might involve the general public in the news cycle on climate change effects.

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