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# Meridian

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**Proceedings of the Two day Annual Research Conclave and  
International Conference on  
*Climate Change and Sustainable Societies Esploro 2025*  
on 21<sup>st</sup> and 22<sup>nd</sup> January 2025**



Organised by  
Research Departments of English, Botany, Commerce and IQAC  
MES Asmabi College,  
P.Vemballur, Kodungallur, Thrissur - 680 671, Kerala



## **Editorial Board**

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# Editorial

We are happy to publish this volume of Meridian, the Peer Reviewed Binannual Multidisciplinary journal for the academic fraternity. One of the most important issues of our day is climate change, which necessitates immediate and coordinated action. The delicate balance between human activity and the environment is highlighted by the startling increase in global temperatures, erratic weather patterns, biodiversity loss, and an increase in natural disasters. Rethinking our relationship with environment, production and consumption systems, and adopting policies that put resilience and equity first, are all essential as we work toward the goal of sustainable societies.

At this juncture the Research Departments of English, Botany, Commerce & IQAC, MES Asmabi College, P Vemballur, Kodungallur conducted Esploro 2025- the two day Annual Research Conclave and International Conference on *Climate Change and Sustainable Societies*, on 21<sup>st</sup> and 22<sup>nd</sup> January 2025. Dr Milon Franz, Principal, St Xavier's College, Aluva inaugurated the conference and led the first technical session. There were technical sessions by Dr Malini Ganapathy, Associate Professor of English, School of Languages, Literacies and Translation, University Sains Malaysia, Penang on "Fostering Sustainability in a Climate- Impacted World," Dr Madhusoodanan Kartha N V, Associate Professor of Commerce, Sri C Achuthamenon Government College, Kuttanellur on "Consumer Behaviour and Green Marketing," Dr Joby Paul, Assistant Professor of Botany, St Thomas College, Thrissur on "Naming Nature: Why Taxonomy Matters for Ecology and Conservation" and Dr David Arputha Raj, Assistant Professor of English, Bharathiar University, Coimbatore on "Ecodigital Storytelling on Climate Change and Sustainability."

Diverse viewpoints were brought together in the conference to slow down climate change so as to promote environmental, social, political and economic sustainability. 58 papers from various disciplines were presented in ten parallel sessions. With immense pleasure the selected 13 papers are published here as the proceedings of the Conference.

**Dr. Amitha P. Mani**

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*Contents*

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<b>UNVEILING OPPORTUNITIES AND CHALLENGES IN MSME</b>	<b>7-16</b>
<b>SUSTAINABLE SOCIAL MEDIA MARKETING: A REVIEW OF LITERATURE</b> CELIN DIFNA C.A., ASWATHY C.R., DR. PRINCY FRANCIS	
<b>VOICES OF NATURE AND WOMEN : AN ECOCRITICAL AND</b>	<b>17-20</b>
<b>ECOFEMINIST ANALYSIS OF CHARLOTTE MCCONAGHY'S</b> <b>NOVELS</b>	
ATHIRA K.J. and SAYANA. K.S.	
<b>CHALLENGES AND OPPORTUNITIES IN TRANSITIONING TRADITIONAL</b>	<b>21-25</b>
<b>BUSINESS MODELS TO CIRCULAR BUSINESS MODELS</b> ASWATHY C.R, CELIN DIFNA C.A. DR. PRINCY FRANCIS	
<b>NAVIGATING CONSUMER BEHAVIOUR: ENDORSER CREDIBILITY,</b>	<b>26-36</b>
<b>BRAND TRUST AND PURCHASE INTENTION</b> THAHASIN N.P., THANSILA M.M. & BHARATHAN SYAM	
<b>PETROFICTION AND SLOW VIOLENCE: A STUDY OF</b>	<b>37-39</b>
<b>ALYSSA RAE'S <i>A REBEL STAR</i>.</b>	
ROSHNA P.B.	
<b>"ENTANGLING QUEER ECOLOGIES: AN EXPLORATION OF</b>	<b>40-41</b>
<b>RESISTANCE AND ACTIVISM IN MARGARET ATWOOD'S</b> <b>'THE HANDMAID'S TALE' AND HAYAO MIYAZAKI'S</b> <b>'PRINCESS MONONOKE'"</b>	
JALEELA K. K.	
<b>WEAVING MEANINGFUL TOMORROWS THROUGH</b>	<b>42-46</b>
<b>ECOFEMINISM: EXPLORING WOMEN RESILIENCE IN ELIF</b> <b>SHAFAK'S <i>THE ISLAND OF MISSING TREES</i> AND SHEELA</b> <b>TOMY'S <i>VALLI</i></b>	
ANJU SUSAN GEORGE	

- POLLUTION, DEVELOPMENT, AND THE LESSONS FROM A HIGHWAY-MAKING ERA! AN ANALYSIS OF KERALA'S CLIMATE PARADOX THROUGH THE LENS OF CARBON (2018)** 47-51  
NAJMA NAZEER
- THE GREAT DERRANGEMENT: CLIMATE CHANGE AND THE UNTHINKABLE- AN ANALYSIS IN THE CONEXT OF ENVIRONMENTAL HUMANITIES** 52-60  
PREETHI ANU JOSE
- PREVALENCE OF *VIBRIO SPP.* AND THEIR VIRULENCE GENES IN VEMBANAD LAKE AND ASSOCIATED CANALS AND COASTAL WATERS DURING THE PRE-MONSOON SEASON** 61-68  
SILPA SANTHOSH, RESHMI. V., JASMIN C. and NANDINI MENON. N
- “MEDIA AND ECO TRAUMA: MEDIA AS A CATALYST FOR ECO TRAUMA, A CASE STUDY OF RECENT ENVIRONMENTAL DISASTERS IN KERALA AND NEIGHBOURHOOD AREAS”** 69-74  
SUNAINA M. NAZAR
- EXPLORING THE LINK BETWEEN STAFF NURSE AUTONOMY AND RETENTION IN NABH ACCREDITED HOSPITALS OF KERALA** 75-78  
THANZEELA EBRAHIM K. and DR. PRINCY FRANCIS
- BREXLIT AND NATIONAL FRAGMENTATION: POLITICAL CLIMATE IN ALI SMITH'S *AUTUMN*** 79-82  
DR. SANAND C. SADANANDA KUMAR

## UNVEILING OPPORTUNITIES AND CHALLENGES IN MSME SUSTAINABLE SOCIAL MEDIA MARKETING: A REVIEW OF LITERATURE

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### ABSTRACT

Micro, Small, and Medium Enterprises (MSMEs) are critical contributors to global economic development, fostering innovation, employment, and entrepreneurship. However, they face significant challenges, including limited resources and increasing competition, necessitating innovative approaches to remain competitive. Social media has emerged as a transformative tool, offering cost-effective platforms for MSMEs to enhance brand visibility, engage with consumers, and promote sustainability initiatives. Sustainable social media marketing, which integrates environmental, social, and economic principles into marketing strategies, presents both opportunities and challenges for MSMEs.

This study explores the intersection of sustainability and social media marketing through a systematic review of literature, identifying key opportunities such as building customer loyalty, accessing new markets, and leveraging cost-effective strategies. It also highlights challenges including resource constraints, technical expertise gaps, and the complexity of measuring campaign effectiveness. Practical strategies and policy implications are proposed, emphasizing skill development, partnerships, and financial support to empower MSMEs.

The findings contribute to academic discourse and provide actionable insights for MSMEs and policymakers. Future research directions include region-specific studies, the application of emerging

technologies like AI and blockchain, and empirical evaluations of sustainable marketing practices. This study underscores the transformative potential of sustainable social media marketing in enabling MSMEs to achieve business growth while addressing global sustainability challenges.

**Key words :** MSMEs, sustainable social media marketing, digital marketing, customer engagement, resource constraints, policy implications, sustainability

### 1.INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are vital contributors to global and regional economic growth, fostering innovation, employment, and entrepreneurship. Globally, MSMEs constitute about 90% of businesses and more than 50% of employment opportunities, highlighting their integral role in economic development (World Bank, 2023). In India, MSMEs contribute approximately 30% to the gross domestic product (GDP) and account for over 45% of exports, underscoring their importance in both domestic and global markets (Ministry of Micro, Small & Medium Enterprises [MSME], 2023). Despite their economic significance, MSMEs face challenges such as limited financial and human resources, necessitating innovative and cost-effective strategies for sustainable growth.

The increasing focus on sustainability has reshaped the priorities of businesses and policymakers globally. With the urgency to address climate

change, resource depletion, and social inequality, integrating sustainability into business operations has transitioned from an ethical choice to a strategic imperative. MSMEs, in particular, can benefit significantly from sustainable practices by improving operational efficiency, reducing costs, and meeting the growing demands of eco-conscious consumers. Research suggests that businesses adopting sustainability not only enhance consumer trust and loyalty but also secure a competitive edge in the market (Elkington, 2018; Kotler et al., 2021).

Social media has emerged as a transformative tool for MSMEs to engage stakeholders and communicate their sustainability commitments effectively. Sustainable social media practices involve using digital platforms to promote eco-friendly products, educate audiences about environmental and social issues, and foster transparent, authentic interactions with customers. These practices go beyond conventional marketing by integrating sustainability into messaging, content, and overall strategy, creating value for both businesses and consumers (Kim et al., 2022). With over 4.9 billion active users globally in 2023, social media platforms offer unparalleled opportunities to amplify brand visibility, foster customer loyalty, and create meaningful connections (Statista, 2023). Unlike traditional marketing channels, social media provides MSMEs with cost-effective and interactive means to showcase their eco-friendly initiatives and differentiate themselves in competitive markets. Studies demonstrate that businesses leveraging social media to align with sustainability goals experience enhanced reputation, customer engagement, and market reach (Kaplan & Haenlein, 2010; Smith, 2022).

This study explores the opportunities and challenges associated with sustainable social media marketing for MSMEs, drawing insights from a comprehensive review of existing literature. By synthesizing findings on the interplay between sustainability and digital marketing, the research

aims to provide actionable recommendations for MSME stakeholders and policymakers to Advance sustainable practices in the sector.

### 1.1 Statement of the Problem

Micro, Small, and Medium Enterprises (MSMEs) are pivotal to economic development, yet they often grapple with resource constraints that hinder their competitiveness (Tambunan, 2023). The advent of social media offers MSMEs cost-effective platforms to engage customers and enhance market presence (Kapoor et al., 2021). However, integrating sustainability into social media marketing presents unique challenges.

Sustainable social media marketing necessitates aligning promotional activities with environmental and social responsibilities, fostering trust among eco-conscious consumers (Lim et al., 2022). Despite its potential, MSMEs face barriers such as limited resources, lack of technical expertise, and difficulties in measuring the impact of sustainability campaigns (Kim et al., 2022). Moreover, the rapidly evolving digital landscape and diverse consumer preferences add complexity to developing effective strategies (Dwivedi et al., 2021).

Conversely, the growing consumer demand for responsible businesses offers MSMEs opportunities to differentiate themselves (Smith, 2023). Addressing the gap in integrating sustainability into digital marketing is essential for MSMEs to balance sustainability objectives with business growth. This study explores the opportunities and challenges associated with sustainable social media marketing for MSMEs, aiming to provide actionable recommendations for stakeholders and policymakers.

### 1.2 Objective of the study

- To explore the opportunities and challenges faced by MSMEs in adopting sustainable social media marketing practices

### 1.3 Significance of the Study

This study is significant as it investigates the integration of sustainability into social media marketing for Micro, Small, and Medium Enterprises (MSMEs), which is crucial for promoting sustainable and inclusive economic growth. As vital contributors to regional and global economies, MSMEs must adopt eco-friendly marketing practices to align their business operations with environmental and social responsibilities. By exploring the opportunities and challenges of sustainable social media marketing, this study offers valuable insights into how MSMEs can enhance brand visibility, foster customer loyalty, and differentiate themselves in competitive markets driven by eco-conscious consumer behavior.

Additionally, the study addresses critical barriers faced by MSMEs, such as resource limitations, lack of technical expertise, and challenges in measuring the impact of sustainability campaigns. It provides practical recommendations to overcome these obstacles and optimize sustainability-focused social media strategies. The findings also hold practical relevance for policymakers and stakeholders by guiding the development of targeted initiatives, including capacity-building programs, financial support, and technological assistance, to support MSMEs in adopting sustainable practices. Furthermore, this study contributes to academic research by synthesizing existing literature, identifying knowledge gaps, and paving the way for further exploration of the interplay between sustainability and digital marketing. This ensures its relevance and utility for both practitioners and researchers working toward sustainable development in the MSME sector.

## 2. CONCEPTUAL BACKGROUND

### 2.1. Definition and Scope of Sustainable Social Media Marketing

Sustainable social media marketing refers to the use of digital platforms to promote products or

services while adhering to environmental, social, and economic sustainability principles (Lim et al., 2022). This approach integrates eco-friendly practices into marketing strategies to appeal to consumers who prioritize ethical considerations. It encompasses activities such as communicating a business's sustainability values, promoting eco-friendly initiatives, and fostering transparency to build trust among audiences (Kim et al., 2022).

The scope of sustainable social media marketing includes:

- **Content Creation:** Developing campaigns that highlight sustainable initiatives, such as eco-friendly products or renewable energy usage (Smith, 2023).
- **Community Engagement:** Using social media platforms to engage consumers in sustainability-focused discussions and build a community of like-minded individuals (Dwivedi et al., 2021).
- **Transparency and Reporting:** Sharing measurable outcomes of sustainability efforts, such as reductions in carbon emissions or social impact projects, to build credibility (Elkington, 2018).
- **Influencer Partnerships:** Collaborating with influencers who advocate for sustainability to amplify the brand's message to a broader audience (Kotler et al., 2021).

This strategic use of social media helps businesses, including MSMEs, connect with modern consumers who increasingly value corporate social responsibility and sustainability.

### 2.2 Overview of MSMEs and Their Challenges in Achieving Sustainability

Micro, Small, and Medium Enterprises (MSMEs) are vital contributors to the global economy, accounting for 90% of businesses and over 50% of employment worldwide (World Bank, 2023). In India, MSMEs contribute approximately 30% to GDP and 45% to exports, highlighting their

economic importance (Ministry of Micro, Small & Medium Enterprises [MSME], 2023). However, MSMEs face unique challenges in adopting sustainability practices.

- 1. Resource Constraints:** MSMEs often lack financial and human resources to invest in sustainable technologies or green practices (Tambunan, 2023).
- 2. Lack of Awareness and Expertise:** Many MSMEs are unaware of the benefits of sustainability or lack the expertise to implement sustainable strategies effectively (Kim et al., 2022).
- 3. Market Pressures:** Competitive market environments force MSMEs to prioritize short-term cost savings over long-term sustainability goals (Dwivedi et al., 2021).
- 4. Measurement Challenges:** Evaluating the impact of sustainability-focused initiatives on social media can be complex and resource-intensive, making it difficult for MSMEs to demonstrate returns on investment (Lim et al., 2022).

Despite these challenges, the growing demand for environmentally and socially responsible businesses provides MSMEs with opportunities to differentiate themselves in competitive markets (Smith, 2023).

### 2.3 Theoretical Frameworks Relevant to Sustainability and Digital Marketing

Several theoretical frameworks provide insights into the integration of sustainability and digital marketing:

- 1. Triple Bottom Line (TBL):** The TBL framework emphasizes the importance of balancing economic, environmental, and social performance (Elkington, 1998). This framework encourages MSMEs to create social media campaigns that promote eco-friendly initiatives while achieving profitability.
- 2. Stakeholder Theory:** This theory suggests that businesses must address the interests of all

stakeholders, including customers, employees, and the community. Social media marketing aligned with this theory fosters transparency and trust among diverse stakeholder groups (Freeman, 1984).

- 3. Diffusion of Innovation Theory:** Proposed by Rogers (2003), this theory explains how new ideas and technologies, such as sustainable social media practices, are adopted. MSMEs can leverage influencers and early adopters to promote their sustainability-focused initiatives.
- 4. Resource-Based View (RBV):** This framework emphasizes leveraging internal resources to gain a competitive advantage. Social media can serve as a low-cost, high-impact resource for MSMEs to showcase their sustainability efforts (Barney, 1991).
- 5. Consumer Culture Theory (CCT):** CCT explores how cultural values influence consumer behavior. This framework helps MSMEs design sustainability campaigns that resonate with culturally diverse eco-conscious audiences (Arnould & Thompson, 2005).

## 3. METHODOLOGY

This study employs a qualitative research approach, focusing on a systematic review of literature to explore the opportunities and challenges of sustainable social media marketing for Micro, Small, and Medium Enterprises (MSMEs). The methodology is detailed as follows:

### 3.1 Research Design

A literature review was conducted to synthesize insights from prior research on the intersection of social media marketing and MSMEs. This approach helps identify key themes, trends, and knowledge gaps within the existing body of work.

### 3.2 Data Collection:

Data for the study were exclusively collected from Scopus, a well-recognized and high-quality academic database. The search used the keywords

“Social media” and “MSME”, targeting literature published between 2015 and 2025. The search included journal articles and conference papers to ensure comprehensive coverage of relevant research. Only literature published in English was included in the study to maintain accessibility and consistency.

### 3.3 Inclusion and Exclusion Criteria:

#### 1. Inclusion Criteria:

- Articles and conference papers published in English.
- Studies focused on MSMEs and social media marketing.
- Publications addressing challenges, opportunities, or best practices related to sustainable or digital marketing for MSMEs.
- Research published between 2015 and 2025.

#### 2. Exclusion Criteria:

- Non-peer-reviewed literature.
- Articles not directly addressing the role of social media in MSMEs.
- Studies lacking actionable insights or empirical evidence.

### 3.4 Screening and Selection Process:

The initial search yielded **104 articles** from Scopus. After screening the titles and abstracts for relevance, **93 articles** met the inclusion criteria and were selected for detailed review and analysis.

### 3.5 Data Analysis:

The selected articles were analyzed using thematic analysis to identify recurring patterns and key themes. The analysis focused on:

- Opportunities for MSMEs in leveraging social media for sustainable marketing, such as enhancing

brand visibility, fostering customer loyalty, and promoting eco-friendly initiatives.

- Challenges faced by MSMEs, including resource constraints, lack of technical expertise, and difficulties in measuring the impact of sustainability-focused campaigns.
- Practical strategies and frameworks for MSMEs to integrate sustainability into their social media marketing practices.

### 3.6 Limitations of the Study:

This study is limited to literature indexed in Scopus, which, while extensive, may exclude relevant research from other databases. Additionally, the focus on English-language publications might omit valuable insights from non-English sources. As a secondary data analysis, the study does not incorporate primary data from MSMEs directly.

## 4. FINDINGS AND DISCUSSION

### 4.1 Opportunities in Sustainable Social Media Marketing

- *Enhancing Brand Visibility and Eco-Friendly Positioning:*

Social media platforms like Instagram, Facebook, and LinkedIn provide cost-effective opportunities for MSMEs to showcase their commitment to sustainability. By promoting green certifications, eco-friendly practices, or sustainable product features, MSMEs can position themselves as responsible and innovative businesses. Studies show that businesses highlighting sustainability efforts see improved brand recognition and credibility among eco-conscious consumers (Lim et al., 2022).

- *Building Customer Loyalty Through Authentic Engagements:*

Authenticity in social media communication fosters trust and loyalty. MSMEs can engage with

customers by sharing behind-the-scenes insights into their sustainability efforts, such as waste reduction processes or ethical sourcing practices. Interactive tools like polls, Q&A sessions, and live videos can further strengthen connections, particularly with younger, eco-conscious demographics (Kim et al., 2022).

- ***Exploring New Markets and Trends Favouring Sustainable Practices:***

The rising consumer demand for environmentally and socially responsible products opens new market opportunities for MSMEs. Social media analytics tools enable businesses to identify target markets that value sustainability, allowing them to craft tailored campaigns. Additionally, MSMEs can tap into global markets by leveraging digital platforms to showcase their unique, sustainable offerings (Smith, 2023).

- ***Cost-Effective Marketing Strategies:***

Social media offers an affordable alternative to traditional marketing channels, making it particularly suitable for resource-constrained MSMEs. Platforms like TikTok and Instagram Reels allow MSMEs to produce high-impact, visually appealing content with minimal investment, helping them reach wider audiences effectively (Dwivedi et al., 2021).

- ***Collaborations and Partnerships:***

MSMEs can collaborate with sustainability influencers or other businesses to co-create content and amplify their reach. Partnerships with larger organizations or government initiatives focused on sustainability can further enhance their visibility and credibility (Rogers, 2003).

## 4.2 CHALLENGES FACED BY MSMEs

- ***Financial and Human Resource Constraints:***

Limited budgets restrict MSMEs' ability to invest in advanced tools, content creation, or paid social

media advertising. Furthermore, many MSMEs operate with small teams, making it challenging to dedicate resources to social media marketing and sustainability efforts simultaneously (Tambunan, 2023).

- ***Technical Expertise and Knowledge Gaps:***

A lack of digital literacy and understanding of sustainability principles hinders many MSMEs from executing effective campaigns. Businesses often struggle to identify the right platforms, strategies, and content formats that resonate with their target audience (Kotler et al., 2021).

- ***Measuring and Evaluating the Impact of Campaigns:***

Assessing the success of sustainability-focused campaigns remains a significant challenge. Metrics such as engagement rates, reach, and customer sentiment are often difficult to interpret in terms of tangible business outcomes, leading to uncertainty about the return on investment (Lim et al., 2022).

- ***Greenwashing Risks:***

Inadequate understanding of sustainability practices can result in unintentional greenwashing, where businesses overstate or misrepresent their environmental efforts. This can damage credibility and erode consumer trust (Elkington, 2018).

- ***Market Pressures and Competition:***

MSMEs face stiff competition from larger firms that can afford to invest more in marketing and sustainability initiatives. This pressure often forces MSMEs to prioritize short-term survival over long-term sustainability goals (Smith, 2023).

## 4.3 Critical Themes from Literature

### 4.3.1. Case Studies or Examples Showcasing Successful MSME Practices

Case studies from literature demonstrate how MSMEs have successfully utilized sustainable social media marketing to enhance their operations

and gain competitive advantages. These examples highlight practical applications, offering insights and inspiration for other MSMEs:

- ***Eco-Friendly Fashion Brands:*** Small textile businesses, such as those producing handmade or organic clothing, have leveraged platforms like Instagram to highlight their sustainable practices. By posting images and videos of their production processes, showcasing workers' fair treatment, and emphasizing the eco-friendliness of materials, these businesses have attracted loyal followers and customers who prioritize ethical consumption (Kim et al., 2022).
- ***Sustainable Food and Beverage Businesses:*** A small coffee brand using biodegradable packaging promoted its initiative on TikTok by creating short, engaging videos that explained the environmental benefits of its product. This strategy not only attracted environmentally conscious consumers but also positioned the brand as an industry leader in sustainability (Dwivedi et al., 2021).
- ***Artisan and Local MSMEs:*** Artisan MSMEs offering handmade or locally sourced products have benefited from community-focused campaigns. For example, a small pottery business promoted its use of eco-friendly kilns on Facebook, gaining traction through user-shared posts and community groups focused on green living. This engagement resulted in increased visibility and sales (Smith, 2023).

These examples underscore that even small-scale sustainability initiatives can yield significant benefits when amplified through strategic use of social media.

#### ***4.3.2. Emerging Trends and Their Implications for MSMEs***

The literature also identifies emerging trends in sustainable social media marketing, providing MSMEs with innovative tools and strategies to stay competitive:

- ***Augmented Reality (AR) for Sustainability Messaging:***

AR tools allow businesses to create interactive experiences for consumers. For instance, an MSME producing organic products could use AR to show the journey of raw materials from sourcing to final production. This immersive approach enhances transparency and engages consumers deeply, helping them connect with the brand's sustainability story (Lim et al., 2022).

- ***User-Generated Content (UGC):***

Encouraging customers to share their experiences with a brand's sustainable practices can significantly boost credibility and reach. For example, businesses can run social media contests where users post images or stories about using eco-friendly products. Such campaigns not only expand reach but also foster a sense of community around the brand (Kapoor et al., 2021).

- ***Influencer Collaborations:***

Partnering with sustainability influencers allows MSMEs to reach eco-conscious audiences effectively. Influencers who align with the brand's values can create authentic content that resonates with their followers, boosting both trust and visibility (Smith, 2023).

- ***Live Streaming for Transparency:***

Live streaming is increasingly popular for showcasing behind-the-scenes activities, such as sustainable production processes or community engagement projects. Real-time interactions through platforms like Instagram Live or Facebook Live enable businesses to answer questions, address concerns, and strengthen consumer trust (Kotler et al., 2021).

- ***AI-Driven Personalization:***

Artificial intelligence tools help MSMEs personalize their social media campaigns by analyzing consumer

preferences and behaviors. This allows businesses to tailor sustainability messages to specific demographics, increasing engagement and conversion rates (Dwivedi et al., 2021).

#### ***4.3.3. The Role of Technology in Amplifying Sustainability Initiatives***

Technological advancements play a pivotal role in enabling MSMEs to overcome traditional barriers to sustainable marketing. Literature highlights how digital tools enhance efficiency and effectiveness:

- ***Analytics for Impact Measurement:*** Tools such as Google Analytics and social media insights provide detailed metrics on campaign performance, allowing MSMEs to evaluate the success of sustainability initiatives. Tracking metrics such as engagement, click-through rates, and sentiment analysis helps refine strategies (Rogers, 2003).
- ***Cost-Effective Marketing Automation:*** Platforms like HubSpot and Hootsuite allow MSMEs to schedule posts, manage multiple accounts, and automate responses, freeing up resources for other business activities while maintaining an active social media presence (Kotler et al., 2021).
- ***Blockchain for Transparency:*** Blockchain technology can provide tamper-proof documentation of sustainable practices, such as ethical sourcing or carbon offset initiatives. This can be shared with consumers through social media, building trust and credibility (Kim et al., 2022).

#### ***4.3.4. Consumer Behavior and Sustainability Trends***

Understanding consumer behavior is crucial for designing effective social media campaigns. Literature identifies key trends among eco-conscious consumers:

- ***Preference for Authentic Brands:*** Consumers increasingly demand transparency and

authenticity from brands, valuing those that demonstrate genuine commitment to sustainability. Social media provides a platform for MSMEs to communicate their values directly to customers (Elkington, 1998).

- ***Rise of Ethical Consumerism:*** The growing popularity of sustainable lifestyles has led to an increase in consumers willing to pay a premium for products that align with their values. MSMEs that effectively convey their sustainability efforts can capitalize on this trend (Smith, 2023).
- ***Demand for Storytelling:*** Consumers resonate more with brands that tell compelling stories about their sustainability journey. Narratives that highlight challenges, achievements, and impact resonate deeply with audiences and drive engagement (Lim et al., 2022).

## **5. IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS**

Sustainable social media marketing holds significant potential for Micro, Small, and Medium Enterprises (MSMEs) to align their business operations with environmental and social responsibilities. Practically, MSMEs need to focus on skill development and digital literacy to execute and monitor sustainability-focused campaigns effectively. Affordable tools like Canva for content creation and Hootsuite for management can optimize resources and reduce costs. Industry collaborations, such as partnerships with larger corporations or community organizations, can amplify MSMEs' visibility while sharing resources and expertise. Moreover, engaging consumers through authentic and transparent communication, including real-time updates and measurable outcomes, can foster trust and loyalty among eco-conscious customers. Policymakers and stakeholders can support MSMEs by providing financial incentives, such as subsidies, low-interest loans, and tax benefits for sustainability practices. Additionally, establishing training programs and

regulatory frameworks can enable MSMEs to adopt sustainable practices more effectively and compete fairly.

Future research should explore region-specific studies to understand how cultural, economic, and regulatory contexts influence sustainable social media marketing. Emerging technologies, such as artificial intelligence, blockchain, and augmented reality, offer untapped potential for enhancing sustainability efforts and should be examined for their applicability to MSMEs. Longitudinal studies are needed to evaluate the long-term impact of sustainable marketing on financial performance, customer loyalty, and environmental contributions. Furthermore, research into eco-conscious consumer behavior, including preferences and responses to sustainability messaging, can help MSMEs design more effective campaigns. Standardized frameworks for measuring the success of sustainability-focused initiatives are also essential to help MSMEs assess their return on investment accurately. Cross-sectoral comparisons across industries can reveal best practices, providing tailored solutions for different business contexts.

## 6. CONCLUSION

This study underscores the pivotal role of sustainable social media marketing in enabling Micro, Small, and Medium Enterprises (MSMEs) to align their business practices with environmental, social, and economic sustainability goals. By leveraging the accessibility and cost-effectiveness of social media platforms, MSMEs can enhance brand visibility, foster authentic customer relationships, and tap into emerging markets driven by eco-conscious consumer preferences. These efforts not only bolster business growth but also contribute to broader sustainability objectives.

Despite its potential, MSMEs face significant challenges, including limited financial and human resources, gaps in technical expertise, and

difficulties in measuring the effectiveness of sustainability-focused campaigns. Addressing these barriers requires targeted strategies, such as capacity-building programs, resource optimization, and partnerships with influencers and organizations that share sustainability goals. Policymakers and stakeholders must also play an active role by providing financial incentives, regulatory support, and access to affordable technologies to create a more enabling environment for MSMEs.

The study also highlights the importance of continued research in this area. Region-specific studies, exploration of emerging technologies, and longitudinal evaluations of sustainability impacts can provide deeper insights into the practices and outcomes of sustainable social media marketing for MSMEs. Additionally, developing standardized frameworks for measuring the success of these initiatives will further aid businesses in refining their strategies and demonstrating tangible results.

In conclusion, sustainable social media marketing represents a transformative opportunity for MSMEs to achieve competitiveness and long-term success while addressing global sustainability challenges. By aligning their marketing strategies with ethical and environmental considerations, MSMEs can not only build resilient businesses but also contribute to the collective efforts of fostering a more sustainable future.

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## VOICES OF NATURE AND WOMEN : AN ECOCRITICAL AND ECOFEMINIST ANALYSIS OF CHARLOTTE MCCONAGHY'S NOVELS

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### **ABSTRACT**

Nature in literature refers to the portrayal and exploration of the natural world in written works. This can include description of landscapes, flora, fauna, and natural phenomena, as well as the portrayal of human interactions with the environment. The term Eco-criticism is obviously used for the observation and learning the relationship between the literature and the environment. Human beings interact with various aspects of the nature and so their lives are indistinguishably bound with non-human beings and other fellow human beings. Ecofeminism is a philosophy and movement born from the belief that the patriarchal systems of domination and oppression of women are directly connected to the systems of domination and destruction of the environment. Man has always considered both women and nature to be silent, passive objects. And therefore, he used both to serve his selfish interests. Charlotte McConaghy's *Once There Were Wolves* and *Migrations* focus on how human beings connect with Nature, the damage caused to the environment and the deep relations between women, animals and the natural world. Both the novels combine feminist and ecological ideas, critiquing exploitation and encouraging compassion toward nature and each other.

**Keywords:** Nature, eco-criticism, environment, ecofeminism, women

### **INTRODUCTION**

The modern ecological devastation has given rise to literature that not only critiques environmental destruction but also seeks to discover its

connection with the systems of oppression. Charlotte McConaghy a contemporary Australian author has created a genre in this stream of thought through her emotionally appealing novels, such as *Migrations* (2020) and *Once There Were Wolves* (2021). Her works roots into the intertwined fates of woman and the natural world, focusing on themes of loss, survival and redemption. By using ecocritical and ecofeminist contexts, McConaghy's novels focus the voices of the nature and women, showcasing the vulnerabilities they face under the same exploitive systems. This paper aims to cross check how McConaghy's works corresponds with the theories of ecocriticism and ecofeminism, offering an assessment of society's impact on the environment and the marginalization of women.

Ecocriticism is a literary theory that examines the relationship between literature and the nature. The proponents of ecocriticism are Cheryl Glotfelty and Lawrence Buel, a prominent figure who describes ecocriticism as the study of the relationship between literature and the physical environment. It challenges anthropocentrism, that believes humans are the center of existence and demands for biocentrism which accepts the need of all living beings. In McConaghy's novels, ecocriticism becomes and intense tool for analyzing the depiction of delicateness of ecosystems, the effect of human activity on biodiversity and the urgent need for conserving environment.

Ecofeminism is a philosophy and movement that connects the oppression of women with the exploitation of nature, believing that both

are deep-rooted in the patriarchal system of domination. Ecofeminism states that just as patriarchal systems exploit women, they also loot the natural resources of earth and leads to environmental degradation and social inequalities. In McConaghy's novels she uses ecofeminism as a lens that reflects the experiences of her female protagonists, who are very much connected to the natural worlds and often fights the patriarchal structures. Her works mirrors how the exploitation of women reflects the exploitation of nature.

Ecocriticism and ecofeminism, both the terminologies are intertwined in their concerns for critiquing the exploitative systems and their claim for a more harmonious coexistence between humans and the natural world.

### **VOICES OF WOMEN AND NATURE: AN ECOCRITICAL ANALYSIS**

In McConaghy's works, nature is an important and active presence that outlines the work. Attributing human touch to the natural world aligns with the focus of eco criticism on natural force. In *Migrations*, the Artic terns are the central tenants of the story, symbolizing resilience and loss. Their migratory Journey , which is considered as the longest in the world, reflects Franny Stone's quest for redemption and belonging. The terns' crisis also highlights the destructive effect of human activities on biodiversity and ecosystems. The extinction of Artic terns represents the extensive crisis of deteriorating ecosystems caused by climate change and industrialization. The devastation of the natural world counterparts Franny's personal sorrow and dislocation. As her quest continues in search for terns, her connection with the natural world becomes a source of comfort and self-discovery. Birds in the novel represents the freedom, survival and the vulnerability of life. The declining population of the Artic terns becomes a touching symbol of worlds declining biodiversity.

In *Once There Were Wolves*, the reintroduced Wolves serves as a figure for both ecological revival and the central character's internal healing. The Wolves represents beauty of nature and power and misunderstandings about predators. The novel examines the tender balance of ecosystems, expressing how the reintroduction of predators can revive the ecological harmony. The Wolves represents Inti Flynn's inner struggles of emotions, trauma and her urge to heal herself and the world around her. The uneasiness between the local community and the Wolves signifies the conflict between humanity and nature. Wolves also symbolizes for both fear and restoration. The misunderstandings about the predators emphasizes the humanity's habit to criticize what they do not actually understand about the predators and marginalized groups.

Both the novels highlight role of humanity in environmental degradation. McConaghy evaluates the practices that degenerates the ecology crossing the limits, asking the readers to reconsider their practices that impact on the planet. Her novels serve as a warning of climate change and protecting endangered species. Another theme which can be noticed in her work is the critique of anthropocentrism. By examining the migrations of the birds or the role of Wolves, she addresses a world which is centered by humans which gives importance to economic growth over sustaining ecology. McConaghy wants her readers to rethink about their place within nature focusing on coexistence rather than domination.

Another theme which can be noticed in her work is the critique of anthropocentrism. By examining the migrations of the birds or the role of Wolves, she addresses a world which is centered by humans which gives importance to economic growth over sustaining ecology.

McConaghy wants her readers to rethink about their place within nature focusing on coexistence rather than domination.

### **VOICES OF WOMEN AND NATURE: ECOFEMINIST ANALYSIS**

Through her novels McConaghy explores the portrayal of women and their experiences and connection with the nature through an ecofeminist perspective. In *Migrations*, Franny's connection with the terns mirrors the interconnectedness over domination. Her need to protect the terns reflects an assessment of exploiting nature of the environment by humanity. Franny also challenges the gender stereotyping by ignoring, traveling alone often at her own cost of personal relationships. Franny's troubled relationships with her family and husband mirrors her hardships to resolve her individual desires with the expectations of the society. From her connection with the terns, she is finding solace from the conflicts – symbolic representation of ecofeminist ideals. Artic terns can also be the representation of resilience and survival against all odds, while her journey mirrors her desire to protect what remains.

Inti Flynn is a biologist who works to reintroduce the wolves to Scottish Highlands. Her connection with the past mirrors her efforts to resolve with her past trauma and violence she had endured. The wolves are the symbol of vulnerability as well as her strength. As a woman in a male dominated field, Inti receives resistance from local community which is an example for marginalization of women. Her commitment towards the environment and wolves questions the control and exploitation over coexistence. Her efforts for rewilding suggest her belief in possibility of reviving harmony between humans and nature. McConaghy questions the traditional stereotypes of woman who were weak and submissive once, presenting them as symbols of strength and resilience.

Ecofeminism suggests that the exploitation of nature and oppression of women are all related. In both novels McConaghy questions the exploitation of natural resources and suppression of woman. The destructions done to the natural resources or ecosystem can be paralleled to the physical and emotional harm that are being inflicted upon women. Her female characters render a sense of empathy for nature which roots out from their own experiences. The solidarity between women and nature are the recurring themes central to ecofeminist thought.

### **CONCLUSION**

McConaghy's novels illustrates the power of narration that calls for urgent concerns towards ecology and feminism. She gave voice to the silent entities including endangered species and oppressed women asking for a deeper understanding between women and nature. She critiques the system of power that continue leads to exploitation and ecological destruction. She portrays women as representatives of change, highlighting their role in environment sustainability and transformation. Her novels remind us the voices of women and nature. In a world fighting with climate change, loss of biodiversity and gender inequality, her novels are both a warning and calls for united action.

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## CHALLENGES AND OPPORTUNITIES IN TRANSITIONING TRADITIONAL BUSINESS MODELS TO CIRCULAR BUSINESS MODELS

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### Abstract

It is becoming more widely acknowledged that attaining sustainability in business requires a shift from conventional linear business models to circular business models. Using existing literature from a variety of industries, such as electronics, manufacturing, and retail, this study explores the opportunities and difficulties related to this shift. Financial limitations, operational inefficiencies, and customer reluctance are among the main issues noted; nevertheless, opportunities like cost reductions, the possibility for innovation, and regulatory backing provide methods to get past these obstacles. The results offer practical methods for companies to successfully adopt circular practices and suggest legislative measures to facilitate the shift. This study adds to the expanding body of knowledge on sustainable commerce by providing useful information to scholars, decision-makers, and business professionals.

**Keywords:** Circular Economy, Business Transition, Sustainability, Challenges, Opportunities

### Introduction

The shift from conventional linear business models to circular business models (CBMs) is increasingly regarded as a key approach to fostering

sustainability in commerce. Linear models, which follow a “take-make-dispose” pattern, significantly contribute to resource depletion and environmental harm. In contrast, CBMs focus on optimizing resource use, minimizing waste, and restoring natural ecosystems. This paper examines the challenges and opportunities businesses encounter during this transition and offers practical strategies backed by empirical research.

### Literature Review

In recent years, the concept of the circular economy (CE) has gained significant attention, with extensive research exploring its advantages and practical applications. Kirchherr et al. (2017) define CE as “an economic system aimed at eliminating waste and the continual use of resources,” emphasizing its role in tackling global sustainability challenges. Studies suggest that adopting circular business models (CBMs) can generate economic, environmental, and social benefits (Geissdoerfer et al., 2017).

### Theoretical Framework

A large portion of CBM research is grounded in the Resource-Based View (RBV) hypothesis. Companies that successfully manage their internal resources—such as commodities, expertise, and

technologies—can gain a sustained competitive edge, claims Barney (1991). CBMs prioritize innovation and resource efficiency, which is in line with RBV.

The research of CBMs is also informed by Freeman's (1984) Stakeholder Theory. In order to achieve sustainable results, it highlights how crucial it is to involve all stakeholders, including suppliers, customers, and legislators. CBMs flourish in ecosystems where stakeholder engagement is valued highly.

### Research Objectives

- Identify the key challenges businesses face in adopting CBMs.
- Highlight the opportunities that can incentivize this transition.
- Propose actionable strategies and policy recommendations to facilitate the transition.

### Methodology

This study is entirely based on existing literature, employing a qualitative approach to synthesize insights from Scopus-indexed journals, peer-reviewed articles, case studies, and industry reports. The research focuses on identifying recurring themes and key findings related to circular business models in the manufacturing, retail, and electronics sectors. This literature-driven methodology provides a well-rounded understanding of the topic, firmly rooted in prior research.

### Research Gap

There are still a number of gaps in the literature despite the increased interest in CBMs. First, SMEs are underrepresented in most research since they concentrate on large firms. Second, there is a dearth of empirical evidence on how consumer behavior affects CBM success. Third, there is still a lack of research on sector-specific issues,

especially in supply chain-complex businesses. Filling in these gaps could yield more insightful analysis and useful suggestions for legislators and companies.

### Challenges in Transitioning to CBMs

#### ➤ Financial Constraints

Transitioning to CBMs often demands substantial initial investments in advanced technologies, infrastructure, and workforce training. Research by Rizos et al. (2016) highlights that small and medium enterprises (SMEs) face the most significant financial hurdles due to restricted access to capital.

#### ➤ Operational Inefficiencies

Integrating circular practices can disrupt established business operations. For instance, modifying supply chains to incorporate reverse logistics—a fundamental aspect of CBMs—can introduce additional complexity and costs (Ghisellini et al., 2016).

#### ➤ Consumer Resistance

Consumers who are accustomed to traditional linear consumption patterns may be reluctant to embrace changes such as product-as-a-service models. Limited awareness of CE's benefits further contributes to this resistance (Bocken et al., 2014)

### Opportunities in Transitioning to CBMs

#### ➤ Cost Savings

Reducing resource consumption and minimizing waste can lead to substantial cost savings for businesses. For example, a report by the Ellen MacArthur Foundation (2015) estimated that implementing circular economy principles could save European companies up to •600 billion annually.

#### ➤ Innovation Potential

The shift to CBMs encourages innovation by driving the development of new products, services,

and processes. Examples include modular product designs and the use of biodegradable materials, which enhance sustainability and efficiency (Stahel, 2016).

#### ➤ Regulatory Support

Governments worldwide are introducing policies to promote CBMs, such as extended producer responsibility (EPR) laws and tax incentives for sustainable practices. These measures help mitigate investment risks and create a more favorable environment for circular initiatives (European Commission, 2020).

### Findings and Discussion

The literature review and synthesis uncovered several key insights. Financial constraints, especially for SMEs, remain a major obstacle, emphasizing the need for more accessible funding mechanisms. Operational inefficiencies, such as the complexity of reverse logistics, often deter businesses from transitioning to CBMs. Raising consumer awareness and promoting education are essential to overcoming resistance to circular practices. Additionally, governments and regulatory bodies play a crucial role in facilitating this transition through supportive policies and financial incentives.

### Thematic Insights from Relevant Studies

**Agricultural Waste Valorization** : Shah et al. (2024) highlighted the potential of repurposing agricultural residues, such as rice straw ash, to enhance soil fertility. This approach aligns with CBMs by mitigating waste and promoting sustainable agricultural practices.

**Digital Platforms** : Wu et al. (2024) underscored the transformative impact of digital platforms in facilitating closed-loop supply chains and driving innovation within CBMs.

**Sector-Specific Circular Strategies**: Komasi et al. (2025) identified regional variations in circular readiness, emphasizing the need for tailored

recycling and waste management strategies to effectively implement CBMs.

**Circular Practices in Hospitality**: Carvalho et al. (2024) showcased the successful integration of circular principles in agri-tourism, improving guest satisfaction and operational sustainability.

**Educational Innovations**: Salinas-Navarro et al. (2024) proposed integrating circular economy concepts into higher education to prepare future professionals for real-world sustainability challenges.

### Discussion

These findings indicate that, while the transition to CBMs presents challenges, it can be successfully navigated through targeted strategies. Financial barriers can be alleviated by promoting public-private partnerships and implementing tax incentives for sustainable practices. Operational inefficiencies may be mitigated by leveraging digital technologies such as IoT and block chain to enhance supply chain efficiency. Additionally, consumer resistance can be reduced through awareness campaigns and by embedding circularity into branding and value propositions. Ultimately, collaboration among businesses, policymakers, and consumers is crucial for scaling circular practices effectively.

### Strategies for Effective Transition

#### ➤ Collaborative Partnerships

Building alliances with stakeholders across the value chain enables the pooling of resources and expertise, accelerating the adoption of CBMs.

#### ➤ Consumer Education

Increasing awareness of circular practices through marketing campaigns and educational initiatives can drive consumer demand and support behavioral shifts.

### ➤ Technology Integration

Utilizing digital tools such as block chain and IoT enhances traceability and operational efficiency in circular supply chains.

### ➤ Policy Advocacy

Actively engaging with policymakers is crucial for shaping regulatory frameworks that support and incentivize circular business practices.

## Policy Recommendations

1. Governments should incentivize circular practices through subsidies and grants for research and development.
2. Policies mandating waste reduction targets and promoting circular procurement can accelerate the transition.
3. Establishing public-private partnerships can drive large-scale adoption of CBMs.

## Conclusion

The transition to circular business models presents both significant challenges and transformative opportunities. While financial, operational, and consumer-related barriers persist, the potential benefits in cost savings, innovation, and regulatory support are compelling. By adopting collaborative strategies and leveraging policy support, businesses can effectively navigate this transition and contribute to global sustainability goals.

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## NAVIGATING CONSUMER BEHAVIOUR: ENDORSER CREDIBILITY, BRAND TRUST AND PURCHASE INTENTION

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### **ABSTRACT**

In today's highly competitive marketplace, marketers increasingly turn to credible endorsers, such as celebrities and influencers in order to build a strong consumer base. Endorser credibility plays a pivotal role in shaping brand perceptions, particularly among younger consumers who are more prone to emulate the behaviors and preferences of trusted public figures. This study examines the impact of endorser credibility on purchase intention, with a specific focus on the mediating role of brand trust. Using purposive sampling, data were collected from college students, a demographic that is highly responsive to influencer marketing. Structural equation modelling (SEM) was employed to analyse the relationships between the variables. The findings reveal that endorser credibility significantly enhances purchase intention and that brand trust serves as a crucial mediator in this process. These results underscore the growing importance of selecting credible endorsers to cultivate consumer trust, which is essential for fostering strong brand-consumer relationships and driving purchasing behaviour in today's consumer-driven economy.

### **INTRODUCTION**

In the twenty-first century, marketing has evolved into a crucial strategy for businesses seeking to capture consumer attention and foster loyalty in an increasingly discerning marketplace (Ghoshal, 2020). The digital revolution has transformed the marketing landscape, offering innovative platforms

and tools such as social media, influencer marketing, and interactive content to engage consumers in dynamic and personalised ways (Bughin, 2014; Eelen et al., 2016).

Within this context, endorsers play a pivotal role in shaping consumer perceptions and behaviours. Leveraging their popularity and perceived credibility, endorsers bridge the gap between brands and their target audiences, enhancing brand visibility and appeal (McCormick, 2018; Sudradjat & Wahid, 2020). The rise of digital and social platforms has amplified the reach and impact of endorsers, enabling them to establish authentic, relatable, and interactive connections with consumers (Zak & Hasprova, 2020). These connections are particularly influential in fostering positive consumer attitudes and driving purchasing decisions (Liu, 2021).

Today's consumers, however, are more critical and value transparency, authenticity, and ethical conduct from brands and their endorsers (Pöyry et al., 2019). This shift underscores the importance of endorser credibility—defined by trustworthiness, expertise, and attractiveness—in capturing consumer attention and fostering brand trust (Fritz et al., 2017; Spry et al., 2011a). Brand trust, reflecting a consumer's confidence in a brand's reliability and integrity, is a key driver of consumer loyalty and purchase intentions (Bachnik & Nowacki, 2018; Lassoued & Hobbs, 2015). Trustworthy endorsers can significantly enhance brand credibility, bridging the consumer's values with the brand's identity.

This study examines the interplay between endorser credibility, brand trust, and purchase intention to answer three critical questions: How does endorser credibility influence purchase intention? What is the role of brand trust in shaping purchase intention? Finally, does brand trust mediate the relationship between endorser credibility and purchase intention? By addressing these questions, the study provides critical insights for marketers and brand managers aiming to strengthen consumer engagement, build trust, and drive purchase decisions. The findings will contribute to both theoretical understanding and practical applications in the evolving field of consumer behaviour and digital marketing.

## **THEORETICAL FRAMEWORK AND HYPOTHESES**

This study explores the relationships between endorser credibility, brand trust, and purchase intention, building on established theories and empirical evidence in marketing and consumer behaviour. The conceptual framework highlights how endorser credibility influences consumer purchase intention directly and indirectly through the mediating role of brand trust.

### **Endorser Credibility and Purchase Intention**

Endorser credibility refers to the perceived trustworthiness, expertise, and attractiveness of a spokesperson or celebrity endorsing a product or service (Spry et al., 2011b; Sudradjat & Wahid, 2020). Trustworthiness is associated with the endorser's honesty, integrity, and dependability, which are critical for building consumer trust (Munnukka et al., 2016). Attractiveness extends beyond physical appearance to include likeability, friendliness, and overall appeal, which enhance the relatability and effectiveness of the endorsement (Joseph, 1982; Wang & Scheinbaum, 2018). Expertise reflects the endorser's knowledge and qualifications in the relevant domain, further strengthening the persuasiveness of the endorsement (Kalam et al., 2023).

Collectively, these elements of credibility increase the perceived authenticity of marketing messages, enhance consumer trust, and positively influence purchase intention (Ohanian, 1990). Research suggests that credible endorsers effectively bridge the gap between brands and consumers by lending legitimacy to the promoted products or services, ultimately driving purchase decisions (Magnini et al., 2008).

**H1:** Endorser credibility has a significant positive impact on purchase intention.

### **Endorser Credibility and Brand Trust**

Brand trust is the confidence consumers place in a brand's ability to deliver on its promises consistently and reliably (Lassoued & Hobbs, 2015). It is a cornerstone of long-term customer relationships and influences perceptions of brand reputation, loyalty, and success (Cretu & Brodie, 2009; Surapto, 2020). Credible endorsers contribute to building brand trust by reinforcing the reliability and integrity of the brand they endorse (Lafferty & Goldsmith, 1999). Consumers often transfer the trust they place in a credible endorser to the brand itself, creating a halo effect that enhances the brand's image and reputation (Lafferty et al., 2002).

This transfer of credibility is particularly important in an era of consumer scepticism, where trust in traditional advertising is waning, and endorsements play a pivotal role in shaping brand perceptions (Fritz et al., 2017; Kang & Sharma, 2012).

**H2:** Endorser credibility has a significant positive impact on brand trust.

### **Brand Trust and Purchase Intention**

Purchase intention refers to a consumer's likelihood or inclination to buy a specific product or service (Mann & Rashmi, 2010). It is influenced by various factors, including brand perceptions, personal preferences, and external stimuli such as advertising and endorsements (Clawson, 1971). Brand trust is a critical determinant of purchase intention, as

consumers are more likely to engage with brands they perceive as dependable and aligned with their values (Sweeney & Swait, 2008). Trust mitigates perceived risks associated with the purchase and fosters a sense of security, which enhances the likelihood of making a purchase decision (Lassoued & Hobbs, 2015).

Research highlights that trusted brands are better positioned to convert consumer interest into actual purchasing behaviour, as trust serves as a key motivator in the decision-making process (Khwaja et al., 2020; Biswas et al., 2006).

**H3:** Brand trust has a significant positive impact on purchase intention.

### Mediating Role of Brand Trust

The relationship between endorser credibility and purchase intention is often mediated by brand trust. While endorser credibility directly influences consumer perceptions and intentions, its impact is amplified when coupled with strong brand trust (Lafferty et al., 2002). Credible endorsers strengthen brand trust, which, in turn, enhances the consumer's confidence in their purchase decision. This dual influence underscores the importance of leveraging credible endorsers to build and sustain trust in the brand (Spry et al., 2011a).

**H4:** Brand trust mediates the relationship between endorser credibility and purchase intention.

### Conceptual Model

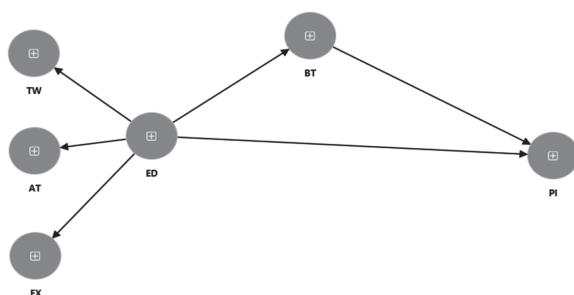


Fig. 1 Conceptual Model

## RESEARCH METHODOLOGY

This study adopts a **quantitative research design** and employed cross-sectional survey approach to collect primary data from respondents. The target population comprised consumers with exposure to endorsed products or services across digital platforms. A non-probability **purposive sampling technique** was used. A total of 84 responses were considered out of 96 responses for data analysis. Data were collected using an online questionnaire distributed through social media platforms and email. The survey was conducted over a period of [October-November] 2 months.

### Measurement Instruments

The constructs in this study—endorser credibility, brand trust, and purchase intention—were measured using validated multi-item scales adapted from prior research. All items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Endorser Credibility is measured using items adapted from Ohanian (1990), focusing on trustworthiness, expertise, and attractiveness. Brand trust was assessed using the scale by Kocak Alan and Kabadayi (2012), reflecting consumers' confidence in the reliability and dependability of the brand. Purchase intention was measured using the scale by Singh and Banerjee (2018), evaluating consumers' likelihood and interest in buying the endorsed product. The questionnaire was pre-tested on a small group of PG students[30] respondents to ensure clarity, reliability, and validity of the items. The data were analysed using Statistical Package for the Social Sciences (SPSS) for descriptive statistics and initial screening, and AMOS for structural equation modelling (SEM) to test the hypothesised relationships.

**ANALYSIS & RESULTS**

Goodness of Fit Indices	Fit Criteria	Measurement Model
Chi-square/df	≤ 3.0	1.911
RMSEA	≤ 0.08 (acceptable: ≤ 0.10)	0.105
CFI	≥ 0.90	0.939
GFI	≥ 0.90	0.783
AGFI	≥ 0.90	0.699
NFI	≥ 0.90	0.881

Table. 1 Goodness of Fit Indices

The goodness-of-fit indices presented in the table provide an evaluation of the measurement model’s alignment with established criteria for structural equation modelling. The chi-square/df value of 1.911 is within the acceptable threshold of d’ 3.0, indicating an adequate model fit. Similarly, the Comparative Fit Index (CFI) at 0.939 and the Normed Fit Index (NFI) at 0.881 both approach or exceed the recommended benchmark of e’ 0.90, demonstrating that the model captures a substantial portion of the covariance in the data. However, the Goodness of Fit Index (GFI) at 0.783 and Adjusted Goodness of Fit Index (AGFI) at 0.699 fall below the preferred value of e’ 0.90, suggesting areas for potential improvement in the model specification. The Root Mean Square Error of Approximation (RMSEA) is 0.105, slightly exceeding the ideal threshold of d’ 0.08 but remaining within the upper acceptable range of d’ 0.10, indicating a moderately good fit. Overall, the indices show that while the model exhibits reasonable fit to the data, there are areas, particularly in terms of GFI and AGFI, that could benefit from further refinement to achieve optimal fit.

Independent Variable	Dependent Variable	Direct Effect	Indirect Effect	Total Effect	R Square
Endorser Credibility (ECD)	Brand Trust (BTA)	0.820* **	-	0.820* **	0.672
Endorser Credibility (ECD)	Purchase Intention (PIA)	0.589* **	0.312 **	0.901* **	0.859
Brand Trust (BTA)	Purchase Intention (PIA)	0.381* *	-	0.381* *	

Table. 2 Decomposition of Direct and Indirect Effects of the Hypothesised Model

The table 2 summarises the decomposition of direct and indirect effects in the hypothesised model, highlighting the relationships between the independent and dependent variables. The results indicate that Endorser Credibility (ECD) has a strong and highly significant direct effect on Brand Trust (BTA) (0.820, \*p < 0.001), demonstrating its pivotal role in shaping consumer trust in a brand. Additionally, ECD significantly impacts Purchase Intention (PIA) both directly (0.589, \*p < 0.001) and indirectly through BTA (0.312, p < 0.01), resulting in a substantial total effect of 0.901 (\*p < 0.001). This highlights the mediating role of brand trust in the relationship between endorser credibility and purchase intention.

Moreover, BTA exerts a significant direct effect on PIA (0.381, p < 0.01), further emphasising its importance in influencing consumer behaviour. The R Square (R<sup>2</sup>) values indicate that the model explains a significant proportion of the variance in BTA (67.2%) and PIA (85.9%). These findings validate the hypothesised relationships, supporting the critical role of endorser credibility in driving trust and purchase intention, with brand trust acting as a significant mediator in this process. The high explanatory power of the model underscores its robustness and relevance in understanding consumer behaviour dynamics.

Hypothesis	Standardised Regression Weight (SRW)	Significance	Inferences
H1: Endorser Credibility → Purchase Intention	0.589***	Significant (p < 0.001)	Supported: Endorser credibility significantly impacts purchase intention.
H2: Endorser Credibility → Brand Trust	0.820***	Significant (p < 0.001)	Supported: Endorser credibility significantly impacts brand trust.
H3: Brand Trust → Purchase Intention	0.381**	Significant (p < 0.01)	Supported: Brand trust significantly impacts purchase intention.

Table. 3 Direct effects of constructs on the dependent variables

The table 3 summarises the direct effects of constructs on the dependent variables, focusing on the hypotheses tested in the model. Hypothesis H1 examines the relationship between endorser credibility and purchase intention, showing a standardised regression weight (SRW) of 0.589, which is highly significant (p < 0.001), thereby confirming that endorser credibility positively and significantly influences purchase intention. Hypothesis H2 evaluates the impact of endorser credibility on brand trust, yielding an SRW of 0.820 with high signifi-

cance (p < 0.001), indicating strong support for the positive relationship. Lastly, Hypothesis H3 explores the effect of brand trust on purchase intention, with an SRW of 0.381 and significance at the p < 0.01 level, confirming that brand trust also significantly influences purchase intention. These findings provide robust empirical support for the proposed theoretical framework, highlighting the critical roles of endorser credibility and brand trust in shaping consumer purchase intention.

Indirect Path	Hypothesis	Indirect Effect	Significance	Inference	Remark
Endorser Credibility → Brand Trust → Purchase Intention	H4	0.312	p < 0.01	Significant mediation effect	Partial mediation observed

Table. 4 Indirect Effect of Constructs on Dependent Variable

The table presents the indirect effects of constructs on the dependent variable, focusing on the mediating role of brand trust in the hypothesised model. Specifically, the path from Endorser Credibility to Purchase Intention via Brand Trust (H4) shows a significant indirect effect of 0.312 (p < 0.01). This result supports the hypothesis that brand trust mediates the relationship between endorser credibility and purchase intention.

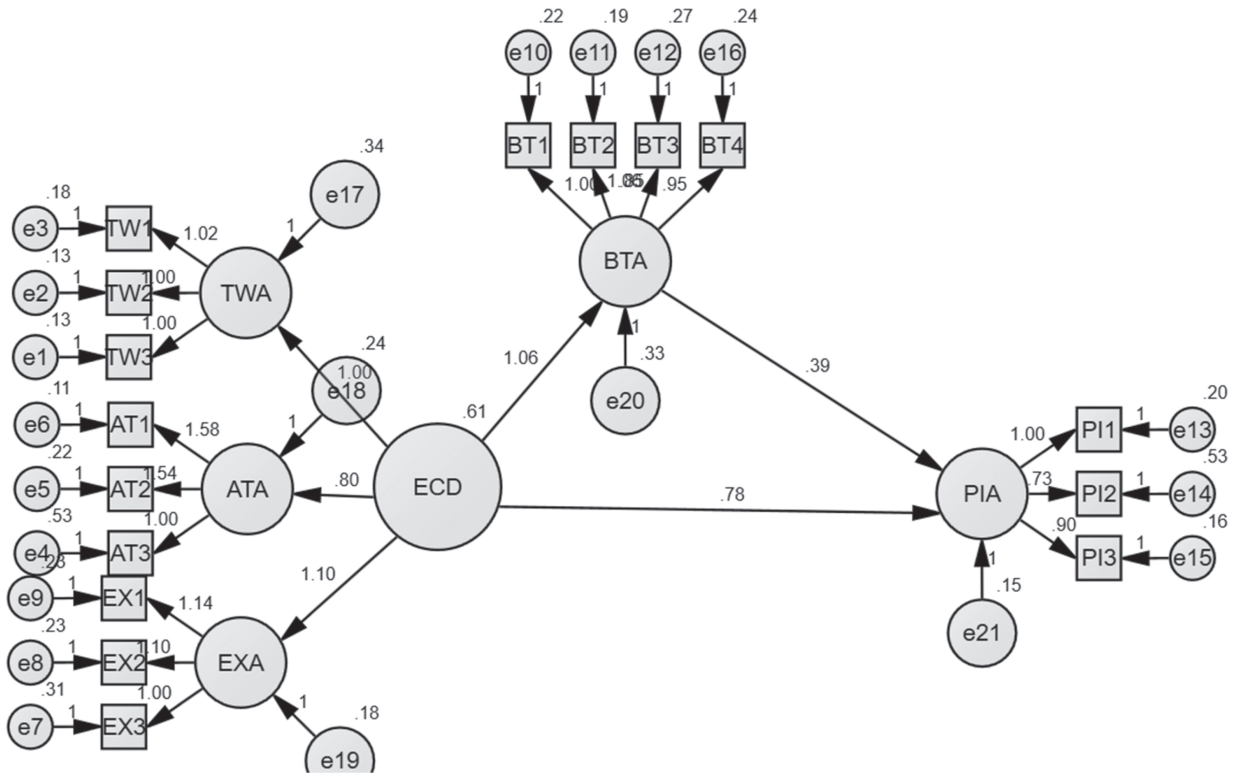


Fig. 2

The findings suggest that while endorser credibility directly influences purchase intention, its impact is also channelled indirectly through brand trust, indicating a partial mediation effect. This highlights the critical role of brand trust in strengthening the effectiveness of endorser credibility on consumer purchase decisions, aligning with the theoretical framework. Such insights underline the importance of trust-building mechanisms in marketing strategies that rely on endorsements.

**CONCLUSION**

This research provides valuable insights into the dynamics of consumer behaviour by exploring the relationships between endorser credibility, brand trust, and purchase intention. The findings confirm that endorser credibility is a critical driver of both purchase intention and brand trust. Specifically, endorser credibility directly influences purchase intention, with a strong effect size ( $\hat{\alpha}=0.589$ ), and also enhances brand trust ( $\hat{\alpha}=0.820$ ), highlighting its dual impact. Furthermore, brand trust significantly contributes to purchase intention

( $\hat{\alpha}=0.381$ ), establishing its pivotal role in mediating the influence of credible endorsers.

The mediation analysis substantiates that brand trust partially mediates the relationship between endorser credibility and purchase intention, with an indirect effect ( $\hat{\alpha}=0.312$ ) complementing the direct effects. These results underscore the necessity of leveraging credible endorsers to foster consumer trust, which in turn drives purchase decisions.

**DISCUSSION**

The findings of this research enrich the existing literature on consumer behaviour by validating the importance of endorser credibility and brand trust in shaping purchase intention. The study reaffirms the role of endorser credibility, consistent with Ohanian’s (1990) framework, which identified trustworthiness, expertise, and attractiveness as critical dimensions. Similar to Singh and Banerjee (2018), this study establishes a significant positive relationship between endorser credibility and purchase intention, confirming that consumers are more likely to engage with brands endorsed by credible figures.

The results also align with Kocak Alan and Kabadayi (2012), who highlighted the strategic importance of brand trust. The findings demonstrate that brand trust is not only an outcome of endorser credibility but also a vital determinant of purchase intention. This supports the assertion that trust acts as a bridge between external stimuli (endorser credibility) and consumer actions (purchase intention). Moreover, the mediating role of brand trust, as observed in this study, echoes the findings of previous research, further consolidating its position as a key variable in consumer decision-making.

However, some nuances emerge when comparing this study with prior research. While earlier studies suggested that trust might fully mediate the relationship between endorser credibility and purchase intention, this study reveals partial mediation, indicating that endorser credibility independently influences purchase decisions. This discrepancy could stem from differences in cultural contexts, product categories, or sample characteristics.

Future research should explore these differences further by applying the model across diverse consumer segments and industries to provide a more comprehensive understanding of the interplay between endorsers, trust, and purchase intention.

### **THEORETICAL IMPLICATIONS**

This research significantly enriches the theoretical understanding of consumer behaviour by integrating the constructs of endorser credibility, brand trust, and purchase intention. By validating Ohanian's (1990) framework of endorser credibility, the study reaffirms the roles of trustworthiness, expertise, and attractiveness in shaping consumer attitudes. The findings contribute to brand management literature by emphasising the mediating role of brand trust, which bridges external influences, such as endorsements, and internal consumer behaviours, such as purchase intention. Moreover, the discovery of partial mediation suggests that

endorser credibility exerts both direct and indirect effects on purchase intention, challenging traditional linear models and prompting further exploration of multi-dimensional consumer decision-making processes.

### **PRACTICAL IMPLICATIONS**

From a managerial perspective, the findings provide actionable insights for marketers aiming to optimise endorsement strategies. First, prioritising endorsers who exhibit high trustworthiness, expertise, and attractiveness can directly enhance consumer purchase intentions. Second, fostering brand trust should be a parallel focus, as it significantly mediates the influence of endorsements on consumer behaviour. This dual strategy can create a synergistic effect, maximising brand loyalty and purchase intention. Lastly, organisations are encouraged to tailor their endorsement strategies to specific target audiences, ensuring that the selected endorsers align with the brand's values and resonate with the audience's preferences, thereby amplifying overall marketing effectiveness.

### **LIMITATIONS AND FUTURE SCOPE**

#### **Limitations**

This study has several limitations that should be acknowledged. First, the sample size was relatively small, limiting the generalisability of the findings across diverse consumer populations. Second, the study relied on self-reported data, which may introduce bias, such as social desirability or response exaggeration. Third, the research focused on a single cultural and geographic context, potentially restricting its applicability to other regions with different consumer behaviours and perceptions. Lastly, the cross-sectional design prevents the establishment of causality, leaving room for longitudinal studies to better understand the dynamic relationships among endorser credibility, brand trust, and purchase intention.

## Future Scope

Future research could address these limitations by employing larger, more diverse samples to enhance the generalisability of findings. Conducting cross-cultural studies could provide insights into the variability of these relationships in different cultural settings. Additionally, integrating a longitudinal research design could help explore the temporal stability and causality of the relationships among the variables. Future studies might also incorporate other mediators or moderators, such as brand loyalty, consumer involvement, or demographic factors, to enrich the theoretical framework. Finally, examining the role of digital influencers and artificial intelligence-driven endorsements could provide valuable insights in the evolving landscape of consumer behaviour.

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## PETROFICTION AND SLOW VIOLENCE: A STUDY OF ALYSSA RAE'S *A REBEL STAR*.

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### ABSTRACT

Energy Humanities is a relatively new realm of study where there is a confluence of objective scientific conclusions and the subjective paradigm of humanities. For Energy Humanities, oil is not just a physical entity, but a strong force binding all forms of human existence. The trickle of oil has spilled over literature too, spawning the new genre called petro-fiction. It focuses on the intricate relationship of energy forms and its socio-cultural impacts. Petrofiction is a term coined by Amitav Ghosh, encompassing the ways in which petroleum is portrayed in novels. Later Stacey Balkan and Swaralipi Nandi renamed the genre as Oil Fiction. Alyssa Rae's novel, *A Rebel Star* a Niger Delta petrofiction, tells the story of Marienela and her life in oil rich Delta. It is the chronicle of the land scuffled by the energy curse and neo imperial capitalist agendas. Besides the physical violence, oil in Delta perpetuates slow violence. Slow Violence, put forwarded by

Rob Nixon, happens gradually and is not necessarily palpable. Slow Violence steadily exacerbates ecological degradation, climate change and pollution. Beyond the violence militants spread in the land, Slow Violence also lurks in Niger Delta potentially enough to annihilate the whole community and ecology existing there.

**Keywords:** *A Rebel Star*, Petrofiction, Slow Violence, Niger Delta, Ecological degradation, Amitav Ghosh, Rob Nixon.

### INTRODUCTION

*A Rebel Star* by Alyssa Rae centers on Marienela, a bright, British adolescent who goes by Mari to her pals. Mari is a member of the top class in London and has an affluent life. Her father is an international businessman with interests in several countries including the oil-rich Niger Delta. Mari's internal conflict begins in school when she discovers about Nigeria. It so happens that a recent significant business choice made by her own father would shortly have an impact on Nigeria. Nigeria, an oil-rich country, is being ripped apart by a range of avaricious and corrupt actors, from government officials to the oil companies looking to maximize their profits from the resource. Apart from the answers Mari seeks, discovering that her father directly contributes to the misery of its people.

Slow Violence, propounded by Rob Nixon, refers to the gradual, unseen, and often imperceptible harm caused by environmental and social forces. It is the long-term effects of climate change, pollution, and structural inequality. The victims of slow violence are often the "poor", including marginalized communities. It is the "violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all" (Nixon, 2011, p. 2). Petrofictions rightly address the Slow Violence caused by the oil pollution and anthropogenic activities.

## OBJECTIVES

- To analyse the role of oil as a neo-colonial tool, latently affixing the foreign oil industry as the omnipotent colonizer, the delta community as the fragile colonized other; oil as a strong catalyst for the formation of power structures in socio-sphere.
- To examine Slow Violence, the imperceptible yet dangerous ecological jeopardy and the preponderance of toxic exposure exacerbated by the oil spillage and unbridled excavations.
- To assess the oil-induced devastations and resource curse in Niger Delta, one of the most oil producing regions in Africa.
- To assert the importance of Petrofictions as awareness mediums to expose the dangers of uncurbed dependence on fossil fuels and to showcase the paramount importance of proposing a sustainability-oriented resource management.

## RESEARCH METHODOLOGY

The proposed paper applies the tenets of Slow Violence, propounded by Rob Nixon, to analyse the invisible but gradual process of ecological devastations in Niger Delta region. The genre of Petrofiction sets the suitable framework for the study as it rightly records the dangerous and indiscernible ecological hazards caused by multinational oil industries. Theory of Neo-colonialism is also explored. Textual analysis of the primary text is conducted and the secondary materials are collected from articles and books.

## ANALYSIS AND DISCUSSION

Niger Delta, one of the richest oil producing premises in African continent is more prone to petroleum induced ecological hazards and cultural erosion. Mariana's journey to Ogoni land in Niger Delta to discover her mother's past, exposed her to the dark realities of oil exploration in the region. Rae (2015) deciphers Mariana's revelations about Niger Delta from her teacher at the onset:

Oil pollution is a great menace to the Nigerian environment. I wish to warn that the harm being done to the environment of the Niger River Delta must be ameliorated by the oil companies which prospect for oil there; the degradation of the ecosystem must end and the dehumanization of the inhabitants of the areas must cease and restitution be made for past wrongs. (p. 4)

The moment Mariana sets in Niger Delta, she sees "black smoke rose above the city from the fires blazing at the far end of the market" (Rae, 2015, p. 60). The dark clouds of smoke looming over the city chills her spine. The nearer she reaches the Ogoni land, she realises that "these flames were being shot out of pipelines leading away from large industrial plants" (Rae, 2015, p. 76). It was the gas flaring phenomenon from the oil company, which oozes out oil and all kinds of gases from the soil. They burn off everything useless, including methane or sulfur compounds. The combustion of toxic elements can perpetuate slow violence over the land and its people, though in a slow mode of action. Mariana herself recollects her science lessons, "those are like two of the most dangerous gases to breath in" (Rae, 2015, p. 77). The spread of these toxic components into the air may not have a sudden impact, but rather it wreaks Slow Violence, happening in a slow pace but potential enough to demolish the whole Ogoni community.

Mariana finds "a large plume of smoke rose into the sky like an omen above the village" (Rae, 2015, p. 83) where "the river water was dark" (Rae, 2015, p. 83). The sediments and the petroleum sewage from the oil companies are pumped into the river, making it detrimental to water life and Ogoni survival. The oil layer on the water surface is so thick that it even blackens the finger of Mariana. The oil spills spread a filthy film of coagulant in water surface, reducing the Oxygen availability underneath thus accelerating the process of eutrophication. Eutrophication may not be instantaneous, but it can slowly evade the water

life. The Ogoni life depending on the river will also be dismantled. “Stories of toxic buildup, massing greenhouse gases, and accelerated species loss due to ravaged habitats are all cataclysmic, but they are scientifically convoluted cataclysms in which casualties are postponed, often for generations” (Nixon, 2011, p. 3). Rae (2015) draws the image of a river, carrying the spilled oil, spawns the seeds of Slow Violence everywhere it stretches out.

The bodies of fish floated by us, their cloudy, dead eyes staring up at me, accusing me. This is your fault, they seemed to say as the oil clogged their gills. How many thousands of fish, birds, and other animals had my father murdered? How many people? Throughout my time spent in the village I saw the damage oil pollution caused. I saw the smoke and the flames from gas flaring. (p. 335)

Petroleum industries as a neocolonial tool, perpetuate enviro-economic disparities and geopolitical tension. Niger Delta, with its richest oil beds, suffers the resource curse, a repeated history of its colonial past. The gluttonous local government’s affinity towards the international oil companies stagnates the progress of the community, making them more prone to Slow Violence. Tess’s confession about educational system in the locale unfurls the plight of a place which is blessed with abundance of oil. “One of the closest schools is several miles away and nearly impossible for children here to get there everyday” (Rae, 2015, p. 133). Denial of basic education to younger generation accentuates the neocolonial agendas to retard their perception of the Slow Violence inflicted upon them.

## CONCLUSION

The unspectacular Slow Violence constitutes substantial threat to the contemporary world. Oil extractivism in the Niger Delta region exacerbates the process of Slow Violence and the ‘poor’, Ogoni community suffers the most by the oil induced ecological scuffles and marginalisation. *A Rebel Star* from the genre of Petrofiction significantly addresses the neocolonial agendas of oil companies and their use of Slow Violence as the tool to accentuate their roots in the land. Alyssa Rae poignantly voices the environmental and social injustices inflicted upon the land of Niger Delta, smothered by the resource curse and unchecked extraction.

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# “ENTANGLING QUEER ECOLOGIES: AN EXPLORATION OF RESISTANCE AND ACTIVISM IN MARGARET ATWOOD’S ‘THE HANDMAID’S TALE’ AND HAYAO MIYAZAKI’S ‘PRINCESS MONONOKE’”

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## ABSTRACT

This paper examines how Margaret Atwood’s ‘The Handmaid’s Tale’ and Hayao Miyazaki’s ‘Princess Mononoke’ depict queer resistance and ecological activism as intertwined and essential for challenging oppressive systems. Through a queer ecological lens, this analysis reveals the complex relationships between queer ecologies, environmentalism, and social justice. This research argues for a more inclusive and holistic approach to ecological thinking, one that recognizes the entanglements of queer ecologies, environmentalism, and social justice. Ultimately, this paper demonstrates how queer ecologies can provide a powerful framework for promoting ecological activism, social justice, and environmental sustainability.

**Keywords:** Queer ecologies, environmentalism, social justice, Margaret Atwood, Hayao Miyazaki, ecological activism, holism.

## INTRODUCTION

Queer ecologies, a field of study that explores the intersections of queer theory and ecocriticism, has gained significant attention in recent years. This paper examines how Margaret Atwood’s ‘The Handmaid’s Tale’ and Hayao Miyazaki’s ‘Princess Mononoke’ depict queer resistance and ecological activism as intertwined and essential for challenging oppressive systems. Through a queer ecological lens, this analysis reveals the complex relationships between queer ecologies, environmentalism, and social justice.

## Queer Ecologies and Resistance

Queer ecologies challenges traditional notions of ecology and nature, highlighting the ways in which queer bodies and desires are intertwined with the natural world. In ‘The Handmaid’s Tale’, Atwood presents a dystopian society where queer bodies are

controlled and regulated by the oppressive regime. However, the novel also depicts

queer resistance and activism, highlighting the ways in which queer individuals can challenge and subvert oppressive systems.

Queer ecologies also highlights the importance of intersectionality, recognizing that queer individuals are often marginalized and oppressed due to their race, class, gender, and ability. It is an interdisciplinary approach that explores the interactions between sexuality, gender and environmental issues, challenges dominant norms and promoting ecological justice. The film explores themes of environmentalism, humans relationship with nature and the struggle between tradition and modernity.

## Ecological Activism in ‘Princess Mononoke’

Miyazaki’s ‘Princess Mononoke’ presents a fantasy world where humans and animals are intertwined. The film depicts a struggle between the animal spirits and the humans who are destroying the forest. The film’s protagonist, San, is a queer figure who challenges the traditional notions of human and animal. Through San’s character, Miyazaki presents a vision of ecological activism that is intertwined with queer resistance.

The film also highlights the importance of indigenous knowledge and perspectives in ecological activism. The film's depiction of the animal spirits and the natural world is heavily influenced by Japanese folklore and mythology. This highlights the importance of recognizing and respecting indigenous knowledge and perspectives in ecological activism.

## METHODOLOGY

This paper argues that queer ecologies provides a powerful framework for understanding the relationships between queer resistance, ecological activism, and social justice. By examining the entanglements of queer ecologies, environmentalism, and social justice, we can gain a deeper understanding of the ways in which queer individuals can challenge and subvert oppressive systems.

Queer ecologies also highlights the importance of intersectionality, recognizing that queer individuals are often marginalized and oppressed due to their race, class, gender, and ability. This paper argues that a queer ecological approach must prioritize intersectionality, recognizing the complex relationships between queer ecologies, environmentalism, and social justice.

## CASE STUDIES

### The Handmaid's Tale

In 'The Handmaid's Tale', Atwood presents a dystopian society where queer bodies are controlled and regulated by the oppressive regime. The novel's protagonist, Offred, is a queer figure who challenges the traditional notions of femininity and sexuality. Through Offred's character, Atwood presents a vision of queer resistance that is intertwined with ecological activism.

The novel also highlights the importance of reproductive justice in ecological activism. The novel's depiction of the oppressive regime's control over women's bodies highlights the importance of

recognizing and respecting reproductive autonomy in ecological activism.

### Princess Mononoke

In 'Princess Mononoke', Miyazaki presents a fantasy world where humans and animals are intertwined. The film's protagonist, San, is a queer figure who challenges the traditional notions of human and animal. Through San's character, Miyazaki presents a vision of ecological activism that is intertwined with queer resistance.

The film also highlights the importance of indigenous knowledge and perspectives in ecological activism. The film's depiction of the animal spirits and the natural world is heavily influenced by Japanese folklore and mythology. This highlights the importance of recognizing and respecting indigenous knowledge and perspectives in ecological activism.

## CONCLUSION

In conclusion, this paper demonstrates how 'The Handmaid's Tale' and 'Princess Mononoke' depict queer resistance and ecological activism as intertwined and essential for challenging oppressive systems. Through a queer ecological lens, we can gain a deeper understanding of the relationships between queer resistance, ecological activism, and social justice. Ultimately, this research argues for a more inclusive and holistic approach to ecological thinking, one that recognizes the entanglements of queer ecologies, environmentalism, and social justice.

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## WEAVING MEANINGFUL TOMORROWS THROUGH ECOFEMINISM: EXPLORING WOMEN RESILIENCE IN ELIF SHAFAK'S *THE ISLAND OF MISSING TREES* AND SHEELA TOMY'S *VALLI*

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### ABSTRACT

Climate changes have emerged as the order of the day in the contemporary world. Torrential rains, earthquakes, landslides and tsunamis have become the new normal. Urban population all over the world is bound to experience the perils of global warming soon. Humans have begun to perceive the dimension of their own role in the ongoing crisis of global climate change seriously. The Anthropocene witnesses ecological milestones like the loss of forests, extinction of several unique species, unprecedented floods, sporadic landslides, pollution, depletion of biodiversity, rise in poverty levels and forced migration. It is quite engaging to explore the ways in which contemporary

women authors respond to such sudden challenges. The proposed paper strives to focus on two women authors and their works that are celebrated for a meaningful approach to life through ecofeminism. *The Island of Missing Trees* by Elif Shafak illustrates the unique connection between the human and the plant world and urges the readers towards a complete rethinking of their approach towards plants. It unravels the healing power of nature on human relations that are torn by war and migration. *Valli* by Sheela Tomy traces the relegation of Wayanad towards environmental depletion, illustrating its social complexity and studying its political correctness. Exploitation of the forest led to the enslavement of its people, and as the forest dwindled, so did the culture of the Adivasis, their way of life, even their language. A meditative rereading into these works unravel the close

connection of women and nature and inspires the readers towards seriously pursuing sustainability and responsible living.

**Key words:** women, climate change, migration, ecofeminism, nature, sustainability, responsible living

### INTRODUCTION

Climate change and associated perils are the game changers in all walks of life in contemporary times. Be it art, literature, real estate, agriculture, sports, defence, security, pilgrimage or war, climate decides the plan of action. The unprecedented nature of monsoon and the havoc it creates upsets the lives of millions of people every year. The Anthropocene witnesses ecological milestones like the loss of forests, extinction of several unique species, unprecedented floods, sporadic landslides, pollution, depletion of biodiversity, rise in poverty levels and forced migration.

The recent forest fire that rocked Los Angeles is an evident example of how the nature unleashes its fury on human settlements and how its primal energy remains untamed to human efforts.

The modern world that essentially thrives through materialism, driven forward by technology and innovation, business and science as we know it, remains largely unconcerned about such natural disasters. Post disaster engagements focus on a brief and superficial round of mitigation strategies that address the effects and not the causes. If nature strikes in Wayanad or in Los Angeles, in Tibet or

in Venezuela, the local governments spring into action, harnessing government machinery, facilitating funds for relief and holding discussions on the possible reasons for the mishap. But the basic issues remain unresolved, due to lack of follow up, lack of vision, absence of sustainability in development and a host of political and business interests.

## OBJECTIVES

- Understanding climate change as the new normal
- Analyzing humans' roles in ecological depletion
- Assessing patriarchal agendas driven by business and industry
- Exploring literary responses to climate change by select women authors

## LITERARY RESPONSES TO ECOLOGICAL CHANGES

At the 2024 United Nations Climate Change Conference or COP 29 held in Baku, Azerbaijan in November, an agreement was reached on financing mitigation to climate change effects and helping developing nations to adopt more sustainable energy sources. The very choice of Azerbaijan as the venue of the conference was controversial, because it is a major oil and natural gas producer and an authoritarian state with excessive corruption. The COP 29 summit stressed on low carbon economies and climate finance to developing nations. Again, when we analyse the situations, ambitious and concrete proposals for sustainable and eco-centric development is missing.

The world, driven by a patriarchal order that is divisive, self-centred and pretentious, continues to revel in its lust for destruction and in the race for power. At this crucial juncture, writers and creative

artists have the pivotal role of stressing the need for nature conservation. Ecological concern has always been a priority for women, as they handle the double roles of birth givers and nurturers with equal finesse. Women authors, keenly aware of ecological changes as they regard the world with utmost sensitivity, express these changes in their works. They sense the dimensions of impending ecological changes instantly and instill in readers a remarkable connection with nature. Two contemporary works of fiction that stand out in their innovative approaches to the human-nature connect are Elif Shafak's *The Island of Missing Trees* and Sheela Tomy's *Valli*.

A gripping novel that deals with love, war, migration and identity, *The Island of Missing Trees* has its narrative inseparably bonded with nature. Shafak explores the prospects of familial bonding against the backdrop of a fig tree narrator and uses high levels of intimacy with a tree that is literally exists in the middle of the lives of the protagonists. The narrative focuses on the healing power of nature in the lives of human beings who are torn by war and migration. The serenity and calm resilience of the fig tree foregrounds the problematic, almost pitiable and insane world of its caretakers. The island that is referred to in the novel is Cyprus, and the novel is set in the 1970s and 2010s, two periods that are marked by intercommunal violences between the country's Turkish Muslim and Greek Christian communities. There is the subtle presence of a fig tree narrator who offers an ecocentric view to the entire narrative, which is further accentuated by politics( communal violence), myth( water), ecological disaster(mass death of fruit bats) and lepidopterology (annual migration of butterflies). The deft craftsmanship of the novelist is commendable as she uses the nuances of climate change and ecological disorder, along with the psychological trauma of human displacement to weave together an engaging, politically triggering and compassionate novel.

The novel moves back and forth in time and has three narratives. In the 2010s the narrative throws light on sixteen-year old Ada who is painfully coming to terms with her mother's death, unaware of her Cypriot roots. The visit of her maternal aunt introduces the second narrative that unearths the story of Ada's parents Kostas and Defne who are separated by ethnic tensions. The Happy Fig, a tavern run by a sympathetic gay couple is the sole witness of their meetings. It is the sapling of this tree which is cut by Kostas and taken to UK when he reunites with Defne after twenty five years that is the narrator of the third part. The ceremonious burying of the fig tree by Kostas during winter season is a powerful portrayal of the traditions of Cyprus.

“The water sucked up through our boughs is the blood of the earth, the tears of victims, the ink of truths yet to be acknowledged. Humans, especially the victors who hold the pen that write the annals of history, have a penchant for erasing as much as documenting. It remains to us plants to collect the untold, the unwanted. Like a cat that curls up on its favourite cushion, a tree wraps itself around the remnants of its past.” (Page 211, Shafak, E. *The Island of Missing Trees*. London: Viking, 2021.)

The way Shafaq portrays the human-nature connect is striking and ethereal as she problematises the pangs of parenthood, teenage, man-woman relationship, communal tensions, migration, home, identity crisis, memory and the innumerable and mundane contradictions of a human world. Through an ecofeminist perspective, Shafaq celebrates nature and finds meaning in existence through the practice of nature connect, thus re-establishing nature as the ultimate solace. She vouches for the tenets of deep ecology as we find the deep and meditative ruminations of the fig tree narrator who calls for a radical shift in the way we treat nature.

The novel *Valli*, by Malayali writer Sheela Tomy weaves a magic of myth and folklore as she narrates the saga of the people of her homeland. High in the Western Ghats in northern Kerala is a blend of greenery, mystery and folklore, replete with the sublime culture of its indigenous people, the Adivasis. Bayalnad - land of the paddy fields nestles in the lap of mother nature and lured traders, colonizers and early settlers from various parts of Kerala. “There was a time when Kalluvayal was a dense, deep forest.” (Page 4, Tomy, Sheela. *Valli*. New Delhi: Harper Collins, 2021.). The very first sentence of the novel *Valli* sets the tone for the depiction of a glorious landscape and uncompromising responsibility towards nature.

Exploitation of the forest led to the exploitation and enslavement of its people, and as the forest dwindled, so did the Adivasis' culture, their way of life, even their language. Weaving a mesh of timeless bond with nature, the time between the 1970s and the present, *Valli* unravels the saga of four generations who adopted Wayanad as their home. From a diary left for her by her mother Susan, Tessa explores the story of her family even as she experiences several emotional experiences.

While treading through the mindscapes of the family of four generations, the author experiences togetherness and resilience, rebuke and despair as she takes the readers through experiences as deep and mysterious as the terrains of Wayanad that form the ambience of the novel. The choice of Wayanad as a backdrop gives ample scope for ecofeministic exploration and reinterpretation as it combines the magical aura of a bygone era and offers a peek into its current state of exploitation and commodification in the pretext of tourism. Several local legends like the Unniyachi lore lends a rich cultural aura to Wayanad's traditions. The sheer vulnerability of the village folk of Kalluvayal, each of them

unique in the way they exist, together seek to survive their tough challenges. The women of Wayanad- Lucy, Kembu, Rukku, Isabella, Sara are amazingly drawn to the fragility and beauty of nature and often become champions of survival and conservation. The men like Thommichan, Peter, Padmanabhan, who are mindful of the value of the pristine land break away from the beaten tracks and guard the forests along with Paniyar boys while Father Felix with his soulful sermons awaken the morbid minds of his parishioners to ingenuity. The very names of families and places exude a charming affinity for nature- Anjilikkunnel, Pichakassery, Valliyooravu, Manjadikkunnu. The rich folklore and customs of the indigenous community of Wayanad is showcased in the novel, lending it a texture of innocence and charm.

“The women went into the forest and along with them, all the gods of the forest-Kali, Kooli, Kattubhagavathi, Kuttichathan, Muthappan..

At the divine stone at the base of a mighty tree, they laid out tender coconuts, aval, rice and payasam in leaf bowls, offerings to the Gods. Then began the singing and dancing.” (Page 187, Tomy, Sheela. *Valli*. New Delhi: Harper Collins, 2021.)

Sheela Tomy encapsulates the tender spirit and wild charm of Wayanad, replete with its greenery, its silences, its benignity, its elusive nature and its resilience. She explores the human presence in Waynad and empathises with nature as her characters seek to transform the reader from their stories of endurance and resilience. Also written in an ecofeminist perspective, the novel attempts to underline the symbiotic aspect of human-nature existence.

## CONCLUSION

Women and nature are intrinsically connected in more than one way. Any depletion of nature will push women to poverty, deprivation and starvation since they are directly connected to nature and natural agents, for the sustenance of the family. They experience the pain of mother earth more deeply than men, as expressed by ecofeminist authors in their works of several forms of fiction. Thus women authors and their imaginative landscapes seek to recreate green spaces that reclaim an intimate connection between humans and nature.

When infrastructural development and business make rapid advances, the very idea of ecological conservation is compromised. Careful planning should be applied to ensure and safeguard the sustainability factor in development. Women authors and thinkers have always applied diligence in portraying the predicament of forests and the indigenous people who inhabit the fringes of forests. Their marginalization and the untold miseries of alienation and cultural insecurities are the byproducts of mindless development. Reclaiming of the green cover and careful and sustainable development are best exemplified by the literary and theoretical responses of women.

While expressing the human responses to climate changes, women authors usher in a lot of accountability and sensitivity. Through their works of meaningful expression, they generate areas of intersectionality that positively seek to change the very dynamics of sustainable development.

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## POLLUTION, DEVELOPMENT, AND THE LESSONS FROM A HIGHWAY-MAKING ERA! AN ANALYSIS OF KERALA'S CLIMATE PARADOX THROUGH THE LENS OF CARBON (2018)

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### ABSTRACT

This paper explores the Malayalam movie *Carbon* (2018) as a story that reflects the environmental and social problems caused by uncontrolled development. It compares the themes of greed in the film to the environmental damage happening in Kerala due to highway construction. The paper looks at issues like the destruction of mountains, rivers, and rocks for building materials, air pollution from crushing rocks, and health problems faced by workers and locals. While recognizing the need for development, it suggests eco-friendly solutions to protect the environment.

**Keywords:** Climate Fiction, Highway Development, *Carbon* (film-2018), Ecological destruction, Western Ghats Conservation, Quarrying and Land Degradation, Green Corrid.

**INTRODUCTION**

Kerala, often celebrated for its lush greenery and balanced ecosystem, faces a paradox as ambitious development projects such as highway expansions alter its landscape. The highway-making era brings promises of connectivity and economic growth but simultaneously threatens irreversible damage to the state's fragile environment. The Malayalam movie *Carbon*, directed by Venu, offers a deeply affecting commentary on human ambition and its ecological cost, making it an apt metaphor for Kerala's current situation.

Highway construction in Kerala represents both a boon for economic development and a bane for environmental sustainability. The state, known for

its rich biodiversity, is currently facing massive ecological destruction in the name of infrastructure development. Major highway projects, such as the widening of National Highway 66, aim to improve connectivity and boost trade. Mountains are levelled, rivers are mined for sand, and rocks are crushed into metal aggregates, causing deforestation, pollution, habitat destruction, and social displacement. These actions mirror the central theme of *Carbon*, where greed blinds the protagonist, Sibi, to the true value of nature, leading to his spiritual and ecological disconnection. He embarks on a treasure hunt in a dense forest, blind to the natural wealth around him, driven solely by his ambition for gold.

Kerala's ongoing highway projects aim to meet the state's growing demand for better transportation networks. The National Highway 66 project is a prime example, involving the widening of the existing road into a six-lane highway stretching across the state. This ambitious project requires extensive land acquisition, deforestation, and large-scale quarrying for construction materials. According to government reports, over 1,000 hectares of land, including agricultural fields, wetlands, and forested areas, have been acquired for highway construction in Kerala. While these projects promise improved connectivity and economic growth, the environmental cost is staggering. The Western Ghats, a UNESCO World Heritage Site and one of the world's eight "hottest hotspots" of biodiversity, faces severe destruction due to indiscriminate land clearing. This sets the

stage for a critical debate: Is rapid infrastructure development worth the ecological damage and long-term consequences it brings?

## METHODOLOGY

This study employs a qualitative analytical approach, examining the Malayalam film *Carbon* (2018) as a lens through which to understand Kerala's environmental challenges. The analysis draws parallels between the film's narrative themes and the real-world ecological impacts of highway development in Kerala. The methodology incorporates:

1. **Textual Analysis:** Close examination of the film *Carbon*'s themes, symbolism, and narrative structure
2. **Comparative Analysis:** Drawing parallels between the film's portrayal of environmental destruction and Kerala's current development challenges
3. **Literature Review:** Analysis of government reports, academic studies, and environmental assessments related to highway construction in Kerala
4. **Case Study Approach:** Examination of specific highway projects, particularly National Highway 66, and their environmental impacts
5. **Policy Analysis:** Review of existing environmental regulations and sustainable development practices

## FINDINGS

### 3.1 Environmental Impacts of Highway Construction

#### 3.1.1 Deforestation and Habitat Destruction

The construction of highways in Kerala involves the clearing of large tracts of forests to create space for roads. These forests are home to diverse flora

and fauna, including many endemic and endangered species. The Western Ghats, known for its ecological richness, is bearing the burden of this deforestation. Cutting down trees not only leads to habitat destruction but also disrupts the ecological balance, causing the extinction of several species and increased vulnerability to climate change. Deforestation also exacerbates soil erosion and increases the risk of landslides, especially during Kerala's monsoon season. This mirrors the forest in *Carbon*, which acts as both a sanctuary and a warning. In the film, Sibi's inability to appreciate the forest's value reflects the state's negligence toward preserving its natural heritage.

#### 3.1.2 Air and Noise Pollution

Bypass development significantly contributes to air pollution in Kerala. Dust generated from construction sites, emissions from heavy machinery, and increased vehicular traffic all deteriorate air quality. Workers and nearby residents frequently suffer from respiratory issues, such as asthma and bronchitis, due to prolonged exposure to fine dust particles. Noise pollution is another major concern. The constant roar of machinery and traffic disrupts the daily lives of people living near construction zones. Animals in nearby forests are equally affected, with noise interfering with their natural behaviours and habitats. This disruption in natural harmony parallels the imbalance depicted in *Carbon*, where human greed disturbs the sacredness of the forest.

#### 3.1.3 Water Resource Depletion

Quarrying for highway construction materials, such as sand and rocks, has a direct impact on Kerala's water resources. The indiscriminate extraction of sand from rivers affects water flow and groundwater levels, leading to water scarcity in nearby regions. Kerala, a state dependent on its rivers and backwaters, is increasingly facing challenges as water bodies are polluted or encroached upon. Construction activities also lead

to the contamination of water resources. Chemicals, fuel spills, and wastes from construction sites seep into rivers and groundwater, rendering them unsafe for consumption. The film *Carbon* reflects this issue symbolically through its focus on water scarcity, reminding viewers of the vital role water plays in sustaining life.

### 3.1.4 Soil Degradation

Roadwork results in the removal of topsoil, which is crucial for agriculture. The loss of fertile soil reduces crop productivity, affecting Kerala's agrarian economy. Additionally, the use of heavy equipment and chemicals during construction contaminates the soil, making it unsuitable for cultivation. The destruction of Kerala's agricultural lands for infrastructure projects echoes the barren landscape encountered by Sibi in *Carbon*. Just as the character finds himself in a hostile and unforgiving environment, Kerala risks losing its agrarian identity to unsustainable development practices.

## 3.2 Social Impacts

### 3.2.1 Community Displacement

One of the most significant social impacts of highway construction is the displacement of communities. Land acquisition for highways forces thousands of families, particularly those in marginalized and rural areas, to leave their homes and livelihoods. Inadequate compensation and relocation options add to the economic and psychological stress faced by displaced individuals. Small-scale farmers, fisher folk, and local businesses are among the hardest hit. Many lose access to their land or resources, pushing them into poverty. This mirrors the themes of displacement and loss explored in *Carbon*, where humanity is portrayed as increasingly disconnected from nature.

### 3.3 Economic vs. Environmental Trade-offs

Carbon emissions from machinery and vehicles increase the state's overall carbon footprint. The

use of materials like asphalt and cement further contributes to air and soil pollution. While highway projects promise economic benefits, such as improved transportation and increased trade opportunities, they come at a high environmental and social cost. The destruction of forests, loss of agricultural land, and displacement of communities represent long-term losses that outweigh short-term economic gains. The film *Carbon* critiques this trade-off by portraying Sibi's relentless pursuit of wealth as futile. His obsession with material gain blinds him to the natural treasures around him, much like Kerala's development model prioritizes growth over sustainability.

## DISCUSSION

*Carbon* offers valuable lessons on the need for a harmonious relationship with nature. The film underscores the importance of balancing human ambition with ecological stewardship. Kerala must adopt eco-conscious development practices to ensure that progress does not come at the expense of its natural and cultural heritage.

### 4.1 Sustainable Solutions and Recommendations

To mitigate the environmental and social impacts of highway construction, Kerala can adopt sustainable solutions, such as elevated highways, green corridors, and the use of renewable materials, can minimize ecological damage. Policies that prioritize environmental conservation and community involvement are crucial. Just as Sibi learns to appreciate the forest's value, Kerala must recognize the importance of preserving its natural resources for future generations.

Many measures like use recycled and locally sourced materials to reduce the need for quarrying and also we can replant trees in cleared areas to offset deforestation. Try to involve local communities in the planning and execution of highway projects to address their concerns and

also strengthen environmental laws and ensure strict compliance during construction. Instead of using natural mountain soil for filling, we can use industrial by-products like fly ash or synthetic materials. These alternatives help conserve natural resources while being environmentally friendly. For river sand, we should use alternatives such as manufactured sand (M-sand), copper slag, or quarry dust. This can reduce the harmful effects of river sand mining and protect ecosystems. In terms of rock quarrying, it's important to set up rules and monitor activities to make sure mining is done in an eco-friendly way, reducing damage to the environment.

To reduce air pollution, dust suppression systems like water spraying can be used at crusher units. This helps to control dust and keep the air cleaner. Workers should always wear protective gear like masks and respirators to stay safe, and regular health check-ups should be mandatory to monitor their well-being. Additionally, planting green barriers around quarries and crushers can help keep dust from spreading into the surrounding areas, improving air quality for nearby communities.

Before starting construction projects, it's crucial to carry out Environmental Impact Assessments (EIAs) to identify potential harm to the environment and find ways to reduce it. These assessments should include input from experts like ecologists and geologists, as well as local communities, to ensure that everyone has a say in how projects affect the environment. After construction, it's important to restore areas that have been affected by activities like soil mining. This can be done by planting trees and other plants to bring the area back to life. Additionally, we should work on improving rivers and groundwater levels through methods like watershed management and rainwater harvesting to ensure sustainable water resources for the future. To raise awareness about the environmental impact of unregulated development, we can launch campaigns that educate the public on these issues. Stronger

environmental laws should also be put in place, and penalties should be enforced for anyone who violates these rules. This will help protect the environment and ensure long-term sustainability.

#### **4.2 Success Stories and Best Practices**

There are some success stories where environmental solutions have made a real difference. In Tamil Nadu, roads have been built using recycled plastic, which has turned out to be a great success. These plastic roads are not only strong and long-lasting but also eco-friendly. By using recycled plastic, this project has helped reduce the amount of waste going into landfills and lessened the pressure on natural resources, making it both cost-effective and sustainable. Maharashtra took a big step to protect its rivers by banning excessive sand mining. To replace river sand, the state promoted the use of M-sand, which is manufactured sand. This move helped prevent damage to riverbeds, protecting aquatic life and reducing environmental harm. The switch to M-sand has been a successful example of finding eco-friendly alternatives for construction materials. In Karnataka, green corridors were created along highways by planting trees, helping to reduce the environmental impact of road construction. These tree-lined highways have restored biodiversity, improved air quality, and provided habitats for local wildlife. This initiative is an excellent example of how development can coexist with nature when planning for sustainability. By integrating these eco-friendly alternatives into Kerala's highway construction projects, the state can achieve development without compromising its rich ecological heritage.

#### **CONCLUSION**

Development is essential for progress, but it must not come at the cost of environmental destruction. Kerala, with its unique geographical and ecological features, must adopt a balanced approach that prioritizes both growth and sustainability. The parallels between the ecological destruction caused

by highway projects and the themes explored in *Carbon* highlight the urgent need for change.

*Carbon* is not just a tale of one man's greed but a critique of humanity's disregard for the environment. The forest in the film symbolizes the richness and fragility of Kerala's ecological landscape. Its beauty and mystery are contrasted with Sibi's materialistic ambitions, mirroring the state's development paradox. The treasure Sibi seeks serves as a metaphor for the promises of economic growth offered by highway projects. However, just as his pursuit leads to his downfall, Kerala's unchecked development risks causing irreparable harm to its environment. The film's ending, where Sibi is left empty-handed, is a powerful reminder of the futility of greed and the importance of living in harmony with nature.

By embracing sustainable practices, involving local communities, and investing in eco-friendly technologies, Kerala can achieve progress without compromising its natural heritage. Kerala must learn from the cautionary tale presented in *Carbon* and recognize the long-term consequences of unchecked ambition. By adopting innovative solutions, engaging communities, and respecting its natural resources, the state can pave the way for a future where development and nature coexist harmoniously.

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## **THE GREAT DERRANGEMENT: CLIMATE CHANGE AND THE UNTHINKABLE- AN ANALYSIS IN THE CONEXT OF ENVIRONMENTAL HUMANITIES**

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### **ABSTRACT**

This paper explores the context of Environmental Humanities in relation to Amitav Ghosh's novel 'The Great Derangement: Climate Change and the Unthinkable' and its subsequent contrast with another contemporary work in Environmental Humanities, namely: Ursula Heise's 'Sense of Place and Sense of Planet'. The mentioned novel is an excellent piece of work with regard to mankind's interdependence on the changing face of Environment. Ghosh notes with great regret that how not much of literature in the form of either fiction or non-fiction has been dedicated to the changing façade of the Earth or 'Nature' as we have known it fondly in the works of Wordsworth, Coleridge and other notable writers. Further, he states how Bankim's novel 'Rajmohan's Wife' has drawn a mimetic ambitious sketch of the landscape which we view as mundane and traditional rhetoric stability. Ghosh has contradicted the 'gradualized approach' of Hutton and Lyell arguing that geological records show a high leap of the mass extinction and the advancement of our carbon footprint. Further, this study delves on how deranged a species we, the human beings are as Ghosh uses the examples of the Hurricane Sandy, the tsunami, 'microcosmic expression of pattern of settlement' and various other 'uncanny' signs that nature wishes to convey to us. In spite of the various red flags, the administration, the state-appointed engineers and policy makers have turned a blind eye to the age-old climatic concerns. Through this novel, Ghosh is instrumental in modelling the thoughts of future environmental humanists.

### **KEYWORDS:**

Climate Change, Uncanny frequency of weather conditions, red flags of nature, New administrative policies, Carbon Footprint, Derangement.

### **INTRODUCTION**

Environmental Humanities is a multidisciplinary field that combines History, Literature, Philosophy and Anthropology into the study of the Environment in the context of Climate Change, Ecocriticism, Environmental Hazards, human beings and their negative and positive interactions with the Nature (or Environment). It represents a huge umbrella of studies which cannot be studied or researched in isolation but needs a researcher to be adept in all areas to lead a fruitful conclusion and channelize the energies of humans in a conservative way, ensuring the safe keeping of the Environment so as to ensure a clean, safe place for the future generations of humans and other species.

The study is an attempt to use the tools of Ecocriticism, Deep Ecology and Cultural Criticism to analyse Amitav Ghosh's work 'The Great Derangement'.

### **RESEARCH METHODS AND TOOLS**

The research tools employed for conducting this analytical study is via the usage of Ecocriticism, Deep Ecology and Cultural Criticism. In order to evaluate the text of Amitav Ghosh in the light of Cultural Criticism, the literary fictional work of Ursula K Heise has been selected. The book titled 'Sense of Place and Sense of Planet- The Environmental Imagination of the Global' serves

as an insightful work for contrasting with Ghosh's novel 'The Great Derangement' in the scenario of Eco Criticism as well.

### **ENVIRONMENTAL HUMANITIES IN THE CONTEXT OF AMITAV GHOSH'S NOVEL**

The Environmental Sciences actually paved the way for the Environmental Humanities as the framing of appropriate literary pieces of work to present a cohesive idea of Environmental preservation in a digestible manner to the general public was as vital as having a healthy breakfast on your table. Even the very existence of mankind is dependent on the rightful preservation and functioning of the 'Nature' that provides for each of our needs. This is explored by many Environmental Humanists. Most notable amongst them is Amitav Ghosh, whose works 'The Hungry Tide', 'The Ibis Trilogy', 'The Great Derangement: Climate Change and the Unthinkable' and so on are pathbreaking literary pieces on the aspect of Climate Change.

In the words of the United Nations Secretary General U-Thant in 1971, 'As we watch the sun go down, evening after evening, through the smog across the poisoned waters of our native earth, we must ask ourselves seriously whether we really wish some future universal historian on another planet to say about us: With all their genius and with all their skill, they ran out of foresight and air and food and water and ideas'; the world is still at a worse situation than it was more than 50 years before. Several policies have been framed, demonstrations been conducted, thinkers have put across new strategies; however, mankind as a whole need to incorporate these in their day-to-day affairs and predispose their action toward the collective goal to forfeit the 'uncanny' manifestations of nature as explored by Amitav Ghosh in his novel 'The Great Derangement'.

Ghosh himself reveals that not much of work in fiction is present in the sphere of Climate Change

or Environmental Humanities. Most of these works are either non-fiction or those that account to be under the arena of fiction are hugely uninteresting to the commonplace readers who would prefer to curl up on their beds with a romantic novel or browse through short- statured verse than delve on something which is more taxing to the brain like fiction with a function of putting things right which man doesn't want to change for an issue whereby he has taken Nature for granted. This is quite evident in the situation when Ghosh reveals in his opening page of Part 1 'Stories' that his ancestors themselves were 'ecological refugees' who had taken the Padma River around which they had settled to be as non- existential as mere breathing. Ghosh points out that how each gulp of fresh air is actually derived in the way man has preserved nature. We know the famous quote by Franklin D. Roosevelt, former president who stated: 'Forests are the lungs of our land, purifying the air and giving fresh strength to our people'. Ghosh has further stated the case of how the Padma River had claimed the land which contained the village where his ancestors were settled. The violence with which the river bore upon the unsuspecting villagers can be equalled to the great cloud of carbon dioxide from Lake Nyos which rolled into the surrounding villages and killed 1700 people, animals and the like.

He further states the example of Sunderbans where the uncontrolled ecological process which happened at a slow, unnoticeable pace has now progressed to an increasing speed with which stretches of riverbank disappear and gets substituted elsewhere. This is neither stable nor dependable as the shoreline keeps changing day by day and it carries the people and their possessions along with the sudden claiming of these lands. He further talks of the receding shorelines and how saltwater has affected agricultural growth. He accounts the examples of the cyclone of Dhaka and how a violent tornado had inflicted North Delhi during 1978 leaving around 30 people dead and several injured. This, he says, is the violent face of

Nature that has been vastly ignored by writers and people as certain ‘freakish’ once-in-a-while or seasonal occurrences. The seeming ignorance of book writers can be found in the London Review of Books, New York Review of Books and so on. He states that literary forms and conventions need to redesign their narratives to direct the world toward the alarming ‘accumulation of carbon in the atmosphere’ which has led to ‘a rewriting of the destiny of earth’.

Ghosh goes to the pessimistic mode stating that literary fiction hasn’t churned enough material to evoke a suitable environmental response from readers and critics. The problem doesn’t lie upon the level of information or understanding of the Environmental Humanist writers. It is actually ‘the imaginative and the cultural failure’ as people are unable to view the bigger picture of such writings if suitable remedial measures aren’t applied. He highlights the case of Arundhati Roy who is quite passionate and vastly informed of the climate change patterns, however in her fictional works, she has side-lined the impact or the role of climate change. Yet she has addressed these issues in her non-fiction works. Next, he states the example of Paul Kingsnorth, who is the author of ‘The Wake’. He says that though Kingsnorth founded the ‘Dark Mountain Project’ and has contributed several non-fictional works in global climate resistance movements, though he hasn’t written a suitable novel to this effect. He further quotes Dipesh Chakraborty from his essay ‘The Climate of History’ where he states that in this age of Anthropocene, humans have become geological agents who are engaged in changing the face of the earth. This spirals into the argument that Climate Change derives its roots from the apparent crisis of culture and is therefore a crisis of imagination. He uses the argument since culture via advertising and targeted marketing which creates the demands for vehicles, appliances, high rise buildings and apartments (which has led to deforestation) has translated to the increase in the carbon content of

the environment. The purchase of a luxurious car is more of a status symbol than its technical perfection, it has more to do with the image of the car being linked to our favourite showbiz personalities. Further, the power of advertising is such that it leads people to conduct unwanted trips to foreign destinations when the same serenity and nature’s beauty can be enjoyed at somewhere nearby, thus leading to the unwarranted use of airplane fuel. Culture is in reality tied to imperialism and capitalism which has founded the massive ecological calamity which has been termed as the Great Derangement, leading to the displacement of the human race as a whole.

Ghosh further goes on to mention how notable Bengali writers like Bakim Chandra Chatterjee just gave a mundane narration of Nature as something tagging along in the backdrop like a ‘filler’ for the background setting of a novel. The gradualist approach of James Hutton and Charles Lyell too direct towards the central credo that ‘Nature does not make leaps’ as these critics saw floods, earthquakes, eclipse, etc as mere ‘prodigies of events.’ However, the reality is that as in Ghosh’s words ‘Nature rather does not just leap but jumps. This is reflected by the extinction of dinosaurs which was an unpredictable phenomenon and the alarming rates of global warming have signalled the progression of the views of Nature as ‘Moderate sentiments’ as that stated by Emma Bovary towards an alarming scenario of ‘catastrophism’. He also labels how Alfred Wegener’s theory of Continental drifting was belittled, however the way ‘uncanny’ events of freakish tornadoes, Hurricane Catarina, earthquakes, floods pinpoint how close to truth these events stand and the crashing point that earth is reaching to. This means that the current science fiction is equivalent to ‘fantasy’, ‘horror’ or ‘surrealistic’ in its genre. Further to this effect is his own experience as Ghosh mentions the images that he had portrayed in his novel ‘The Hungry Tide’ merged with the gory images of the damages instilled by the Tsunami of 2004. He recounts how

the settlements of the locals had been grazed to the ground as though the place were hit by a bomb. He says that much of the damage was due to the hard-headed politicians and engineers who designed these settlements without adequate safety precautions to last for centuries to come and bear the brunt of the 'surrealistic' and 'improbable' climate prodigies of nature.

He narrates extensively how old ports like London, Amsterdam, etc are naturally protected by estuaries and the like; however, the designing of Asiatic ports like Cochin, Surat, Dhaka, etc depended hugely on the town administrators. It is here that the individuals entrusted with the safe planning of the cities should have laid solid foundations of these cities to prevent the global derangement. The tsunami had in fact served as an eye-opener for policy makers stating that a revision of seismic and hazard assessment of the NW Indian Ocean was the need of the hour. He narrates how the city of Mumbai, which forms the commercial and financial capital of India would suffer at the hands of tornadoes or floods. Further, he cites evidences of the 2005 rainstorm which showed people that Mumbai wasn't exactly as resilient as people previously thought it to be. He picturises the possible effects of unpredictable storm and winds would be flying debris which could shatter the glass-wrapped offices of the city. Further, electricity would be disrupted which would pull ATMs out of action, and floods would lead to people and schoolchildren stranded. More so, India's financial systems disrupted as RBI and BSE stock exchanges would be affected. Much more alarming would be the bursting and non-functioning of the Bhabha Atomic Research Centre at Trombay which would put radioactive wastes and water in the environment, a scenario equivalent to the case at Fukushima Daiichi Plant. This pinpoints that societies and polities need to adapt and frame decisions to ensure collective survival of humans from the vagaries of Nature.

In Part II 'History', Ghosh uses the term 'Anthropocene' (or the Age of Man) to be equivalent to that of climate crisis and impending destruction of flora and fauna. He says that every human being that lived on this planet has an equal culpability and accountability of the way that he has either utilised or mis-utilised the resources. The Anthropocene is the latest historicization that makes human existence a thing of the past. History is terminal in nature as it renders us incapable of exceeding it. He states that capitalism is one of the principal drivers of climate change at the surface level, however the real forces driving the environment to destruction is imperialism and the changes brought about in the Indian landscape due to the disastrous effect of the British empire (rule). He says that Asia is in actuality central to the crisis. The vast disparity of Asia's accountability to climate change in contrast to the European continent is evident in the statistics of the number of potential victims of Bangladesh and Vietnam who are increasingly impeded by the sea-level rise. This is due to the aspect to global warming due to which the Himalayan glaciers are melting at an alarming rate which translates to water crisis. The bearers of the brunt of industrialization and pollution is the poorer segment especially the women and the children. Asia, therefore has to face the critical questions of 'mitigation, preparation and resilience'. Global strategies would be vastly inappropriate if Asians do not embrace the true ideals for which a shift in the outlook and policies for bringing about climatic change need to be internalized to the foundations of the society such that each individual would be equally responsible.

That said, Ghosh posits that it was the advent of industrialization in Asia during the 1980s that led to the emergence of the climate crisis. The after-effects of pollution was already felt in the atmosphere right from the 1930s and the 1950s and the effects would have been more pronounced had Asia sustained its level of economic expansion. Asia's after effects of industrialization shows that

the planet would not be able to handle ‘these patterns of living which was adopted by every human being’. Ghosh references the patterns of 16<sup>th</sup> and 19<sup>th</sup> century of the growth of Asia and how Asia stepped into industrialization only in the late 20<sup>th</sup> century the bruise of which was imprinted on Nature. It was not merely depicted as ‘modernity’ in terms of a virus spreading from West to the rest of the world.

He states that in the China had utilized the coal reserves only towards the end of the twentieth century, they didn’t consume their coal reserves entirely but restricted to those present in the rural areas and depended upon other fossil fuels, therefore the Chinese did not alter their landscape much. Asia didn’t enter into the state of industrialization till the 20<sup>th</sup> century which is quite evident in the case where it was the British who had exploited the oil wells of Yenangyaung, Burma and this need of the British became prominent after the second Anglo- Burmese War in 1852-53 where the British took control over most of these wells. The King of Burma tried his best to regain control over these wells, but the British seized the rest of region in 1885 via a megacorporation with Burmah- Shell. This occurred as England didn’t have much fuel reserves and the increasing fossil-fuel consumption led to the British having to look after for newer venues which produced coal, hence the capture of the Burma oil wells. The steam technology increased the carbon footprint of Britain and its colonies. Prasannan Parthasarathi has praised Ghosh’s attempts at History saying that ‘This vast global inequality is, in the final analysis, backed up by military power, which is heavily dependent upon fossil fuel technologies. A fascinating body of sociological research, again conducted by Andrew Jorgensen with collaborators, has found a powerful link between levels of military spending, measured as a proportion of gross domestic product or military personnel as a fraction of the labour force and carbon emissions. We have a double whammy:

inequality is a major contributor to our climate crisis, as is the apparatus of violence that enforces our vast global inequalities. Ghosh is right on target in invoking empire as critical to our dilemma of planetary heating.’

Through History, Ghosh narrates how the West has successfully incorporated the consumption of fossil fuels in the day- to- day life of Asian nations and other colonies. Steam vessels from Britain arrived at India to obtain the share of free manpower as well to usurp the precious natural resources and in the process evoked forceful consumerist culture among the Indians which would add impetus to the growing industries of Britain. Ghosh says that Indian businessmen were no less at fault and wanted regular steamers between India and England, which Ghosh has mentioned in his work ‘Flood of Fire’ through the personage of Dwarkanath Tagore. Tagore was a key figure in the history of India’s growing carbon economy. He was a businessman who had helped build commercial infrastructure and hugely propagated the building of railroads for connecting of important cities and towns. Another point that Ghosh states is that Western powers had hold over most Asian and African nations in the form of colonies and they extensively used ‘steam technology’ and deliberately cut- off alternate sources of energy in the colonies. Therefore, Ghosh ponders of a hypothetical situation that had de- colonization occurred, it would have followed the dismantling of empires. This would mean that imperialism wouldn’t have manifested in any of these countries at the first place. This implies that industrialization and hence climate crisis, according to Ghosh would have been considerably delayed at Asian and African cities as they wouldn’t have been subject to the alarming rate of economic expansion. However, he says that the most important question is that are we, the humans the ones who are making bad choices by resorting to the previous patterns of history and moving ‘towards self- annihilation’. Many ingenious thinkers like Mahatma Gandhi

foresaw the devastating after-effects of industrialization as also notable Taoist, Buddhist and Confucian figures tried to raise their voices against the injected industrialization. These figures tried to retard the progress of the economy towards seemingly alarming carbon-footprint economies. Ghosh, says that not everyone moved towards the direction that these voices called for and that in reality global warming is 'the product of the totality of human actions over time'

In the portion 'Politics', Ghosh mentions that Climate change has brought about a realignment in the idea of freedom, which forms a major component of politics. Politics seeks to be free from Nature and non-human issues. The arts along with politics of 20<sup>th</sup> and 21<sup>st</sup> centuries dealt more with the individual self-reflexive. Art was considered to be progressive in nature and contributed to aesthetic and political matters. However, arts are moving in a backward direction with respect to its depiction of climate change fiction as 'the literary mainstream remained just as unaware of the crisis on our doorstep as the population at large'. The political sphere has been littered with wrong preoccupations due to the influence of internet and the digital media. The public is more concerned regarding questions of identity such as religion, caste, ethnicity, language, etc. Ghosh is of the view that these subjects have been over-emphasised which means that a paradigm shift in the subject matter of politics in correlation to the issues of public sphere calls for an appropriate action. He says that in the manner Updike has quoted modern novel as 'individual moral adventure', in literature, moral implies a 'journey of perfection, of bearing witness and testifying in order to uphold sincerity and authenticity'. Hence literature is more concerned in dealing with topics of moral relevance rather than choosing to investigate into matters of climate change. Politics in India need to evolve to incorporate the changes at the global level to forestall climate catastrophe. The reasons are:

(i) there is a perceived conflict with what 'freedom' implies and the modern conception of matters of relevance in modern-day politics

(ii) there is a 'lack of transitive connection between political mobilization and global warming'. This means that even though many environmental activists and their supporters have made vocal protests at various places in India, they haven't made much of a mark to bring a vast change in the policies and their implementation in terms of bringing about a reduction in global warming and towards the preservation of the environment.

Hence, politics is directed towards issues relating to identity and public sphere doesn't bring about major changes in policy with relation to climate change. For example: the people at Iraq protested against the War but this didn't bring about any change in the political situation in Iraq. He says that the countries of West are post-political spaces and are managed by other frameworks and apparatuses. Ghosh says that there are no resources of democratic governance to seriously address climate change. People are advocated by climate change activists that the individual moral approach to climate change is of utmost importance but 'the scale of climate change is such that individual choices will make little difference unless certain collective decisions are taken and acted upon'.

We are trapped in 'individualizing imaginary' and need to find a way out and the individualistic approach isn't necessarily going to make a vast impact in Climate Change. The yardsticks of morality aren't the same and we needn't necessarily just resort to blaming the policymakers, but Ghosh says that the major emphasis should be on the writers and artists that we should be able to imagine the actual issues and act accordingly to bring major changes in the Environment. The Anglican societies of US, UK, Australia, New Zealand, Canada are engaged in denialism and activism, which led to intense political polarization. Ghosh states that the security establishments in US are committed to

studying climate change and has ‘appropriated the language and even the tactics of climate change activism.’ In these nations, intelligence agencies are also producing detailed studies of the effects of Climate Change. It would be counterintuitive if major nations don’t give the necessary importance to Climate Change, he adds that it is the status quo of the distribution of power and hence the justifiable consumption of fossil fuels that needs to be maintained. One possible method of averting Climate Change is ‘the armed lifeboat’ posture which would keep the climate refugees under cover and the nation will be able to protect its own resources but it has its own limitations as ill effects of Environment has spread everywhere. The distribution of power ‘lies at the core of the climate crisis’ and it has intruded to geographic and military regions around the world. Next, Ghosh states the politics of attrition where the shocks of climate change would be absorbed by the lower strata of the society, acting as a cushion since without the poorer section, the middle-class strata particularly the affluent, would be crippled. Ghosh states ‘in the West, the wealth and habits based upon inefficient infrastructures would transmit to climatic impacts which could lead to manifestation of systemic stress.’

**ECOCRITICAL, DEEP ECOLOGY AND CULTURAL CRITICAL DIMENSION OF ‘THE GREAT DERANGEMENT’ COUPLED WITH A FUNCTIONAL CONTRAST WITH URSULA HEISE’S ‘SENSE OF PLACE AND SENSE OF PLANET’**

It has been stated by Ursula Heise in her work ‘Sense of Place and Sense of Planet’ that ‘Globalization’ and ‘Ecocriticism’ are the contemporary terms in English Literature, after ‘Structuralism’ and ‘Post-Structuralism’. Though most of us are engaged in reading of texts related to Structuralist and Post-Structuralist Thinking, yet the relevance of Globalization in the arena of Art,

Politics, Climate Change, Policy Making, Scientific Know-How is gaining prevalence post Industrialization of the developed and developing nations. Ecocriticism was first used by William Rueckert in 1978 in his essay ‘Literature and Ecology: An Experiment in Ecocriticism’. Through ecocriticism; ecology and ecological concepts are applied in the study of literature; this is due to the fact that ecology is of the highest relevance especially in the light of Climate Change and Global Warming.

Heise in her work places specific emphasis on a particular location (‘localist’ as pinpointed by her) whereby she delves into North American environmentalism whilst Ghosh has oscillated between the climatic scenario at his native-country India and paints scenes of drastic climate change as he visualizes at New York. Heise has tried to examine the connection between Environmentalism, Ecocriticism and the theories of Globalization and Cosmopolitanism on one hand and Ulrich Beck’s theory of risk society on the other hand. In other words, she has tried to depict the imagination of the global and the ethical commitment of the local environmental space to the environmentalist thoughts and writings in English literature. She has argued that ecocriticism needs to explore and test the representation of the global scenario rather than just adding a green cliché to every other work of Environmental Humanities. She proposes the concept of ‘Eco-Cosmopolitanism’. It is a broad framework which entails how local systems related to culture and ecology exist on the global scale and how one’s sense of place is related to the concepts of environmental imagination, deterioration and globalization. She says that mere localism is inadequate in understanding the effect of humans upon nature in the larger perspective which is at the global scale. These need to be analysed not just in certain ethical communities but the relation of humans across various cultures need to be evaluated in terms of their varied actions

evaluated at the context of the present global policies. Therefore, instead of merely pinpointing certain individuals as the focal points towards contributing significant climate change towards a greener tomorrow, to quote Heise, it is about 'thinking of indigenous traditions, local knowledge and national law' in the context of the planet as a whole. We can also consider an Archetypal or a Myth- based approach to evaluate both Heise's and Ghosh's works as the archetypal, dominant habits and patterns of indigenous populations can be suitably manipulated on the global scale and as a suitable tool for anti- globalization and regional, grassroots movement. Hence, through her work, Heise theorises that all humans have a duty to all ecosystems and not just the one place (localist approach) that we as an individual or a group of individuals are a part of.

Eco- Cosmopolitical analysis of Ghosh's text can be seen as humans are the individual citizens of the world, each accountable for the 'freakish events' or how the planet is reacting adversely to the unwarranted effects of population explosive. It makes each human on the planet equally responsible rather than as Ghosh states at the part 'Politics' that certain religious or political leaders or groups need to own up their leadership in averting the global Climate Crisis.

Further, a critical reading of both texts in the light of Deep Ecology, we can view how Deep Ecology has laid an anthropocentric focus on Environmentalism. In other words, we should disdain the Anthropocene picturisation of the ecological system whereby we place humans and their activities at the top of the ecological pyramid. Environmentalists and eco-critics have framed a 'biocentric approach' which centralizes the non-human world. 'Anthropocentrism is often contrasted with a possible biocentric stance, one attempting to identify with all life or a whole ecosystem, without giving privilege to just one species' (Clarke 3). Deep ecologists advocate the

value of the non- human world rather than over-emphasising on the needs of just human beings. Environmental ethics calls for a biocentric stance rather than other creatures and non- human things being a means of achievement of human goals. Heise goes one step forward by stating that humans need to evolve themselves to translate their needs to a biocentric attitude which would lead a significant change in Environmental dynamics.

## CONCLUSION

In conclusion, Ghosh calls upon religious organizations hopefully that they could motivate the leaders involved in the politics of climate change. Grassroots movement wouldn't be able to bring about the adequate level of impact upon climate change but religious organizations have the power to transcend the issues of the major economies, acknowledge intergenerational and long-term responsibilities and make the people to work progressively toward a better future within the limitations. He states the example of Pope's Encyclical 'Laudato Si' that no miracle technology will save us nor Paris' Climate Changes' endless technical jargons and he states that the Church is equally responsible in alleviating poverty and appeals to help and guidance from people. However, not many people are convinced of Ghosh's conclusions. Ursula Heise, a critic has stated "This is an odd turn of argument not only because quite a few major religions rely on the centrality of individual conversion as the key to changing world- the individual perspective Ghosh had earlier rejected. Many institutionalized religions have also historically distinguished themselves by their expertise in pitting populations against each other at least as much as the ability to 'join hands with popular movements' and with each other that Ghosh stakes his hope on".

In my personal opinion, religion or religious leaders may not necessarily be motivated towards instigating climate change without propagation of their religious doctrines or strong hold over the

masses. It is actually the individuals and the policy makers at the nations' governmental bodies who need to meticulously check whether the public adheres to the guidelines laid in policy agreements on Climate Change and they are not a mere collection of printed letters in a document mutually agreed upon by a body of ministers. The absence of a suitable plan of action in Ghosh's novel can be contrasted with the 'eco- cosmopolitanism' framework adopted by Heise which gives every human a sense of ownership towards the betterment of the staggering dimensions of Climate and motivate each of us to a greener, carbon- free Earth at the global scale. We should however not disdain Ghosh's work completely but approach it as an eye- opener to engage the impending issues of Climate Change and an Environment struggling to recover. We can also view Ghosh's novel 'The Great Derangement' as a call for more works on Climate fiction in the present context so that writers may combine their scientific, deductive, political knowledge and social abilities to appeal to the various sections of the society to bring a meaningful change.

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# PREVALENCE OF *VIBRIO SPP.* AND THEIR VIRULENCE GENES IN VEMBANAD LAKE AND ASSOCIATED CANALS AND COASTAL WATERS DURING THE PRE-MONSOON SEASON

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## ABSTRACT

*Vibrio cholerae*, the pathogen responsible for cholera, flourishes in environments characterized by inadequate sanitation and contaminated water sources. This study aimed to assess the prevalence of *Vibrio cholerae* and its associated virulence genes in coastal waters and selected locations within Vembanad Lake through a culture-independent methodology. Metagenomic DNA extracted from water samples was subjected to screening utilizing PCR primers targeting the outer membrane protein (*omp*), cholera toxin gene (*ctx*), and toxin-regulating protein (*toxR*). The findings revealed the presence of *Vibrio cholerae* at all 14 monitoring stations within the connecting canals, whereas 58% of the coastal water samples tested positive for the *omp* gene. Notably, none of the samples obtained from Vembanad Lake indicated the presence of *Vibrio cholerae*. Among the 21 positive samples analyzed, 8 exhibited the *toxR* gene, while none contained the *ctx* gene, thus excluding the presence of toxigenic *Vibrio cholerae*. Nevertheless, the detection of the *toxR* gene suggests a potential for pathogenicity through horizontal gene transfer under favourable conditions. This research underscores the ecological dynamics of *Vibrio cholerae* within the Vembanad Lake ecosystem and highlights the imperative for continuous monitoring to avert potential outbreaks.

**Keywords:** Cholera, *Vibrio cholerae*, Vembanad Lake, *omp* gene, *toxR* gene, *ctx* gene

## INTRODUCTION

Microbial pollution in drinking water sources and aquatic ecosystems is a major global concern. It is estimated to cause approximately half a million diarrheal deaths each year due to water-associated diseases. The death rate of diarrhoea in India is 45 per 100,000 population (Behera and Mishra, 2022) Therefore, it is crucial to prevent human interaction with contaminated water bodies.

Cholera, caused by *Vibrio cholerae*, is a significant waterborne disease. (Ojeda Rodriguez *et al.*, 2024). Cholera outbreaks are common in areas with sewage contamination of drinking water, faecal contamination of water sources (Muzembo *et al.*, 2022).

Many of the coastal water's fauna and flora, including phytoplankton and zooplankton, act as reservoirs and vectors of *Vibrio cholerae* (Racault *et al.*, 2019). These reservoirs and vectors may help *Vibrio cholerae* and other *Vibrio* species to survive in unfavourable conditions or aid in their regional transportation (Stewart *et al.*, 2008). In the current study, molecular tools are employed to monitor the distribution of *Vibrio* species and *Vibrio cholerae* in selected locations along the coastal regions near Vembanad lake in Kerala.

Prevalence of *Vibrio cholerae* were confirmed by the presence of *omp* gene and the pathogenic potential of *Vibrio cholerae* were assessed by with the presence of *toxR* gene and *ctx* gene. The toxin regulatory gene(*toxR*) control the expression of *ctx* gene and the cholera toxin gene (*ctx*) encodes cholera toxin, which causes diarrhoea.

## MATERIALS AND METHODS

### Sample Collection

39 water samples were collected from selected locations of Vembanad Lake, associated canals and coastal waters during pre-monsoon season (12 seawater samples, 13 water samples from Vembanad lake and 14 water samples from associated canals of Vembanad lake). (Table 1, Fig 1). The water samples were collected in sterile polypropylene bottles of carrying capacity 1 litre and the sampling bottles were labeled properly.

**Table 1:** Table Showing the List of Water Samples Collected for Study

SL NO	Sample Code	Sampling Stations
1	WID1A	MUNAMBAM SHORE
2	WID1B	MUNAMBAM 1/2KM
3	WID2A	CHERAYI SHORE
4	WID2B	CHERAYI 1/2KM
5	WID3A	KUZHUPILLY SHORE
6	WID3B	KUZHUPILLY 1/2KM
7	WID4A	PUTHUVYPIN SHORE
8	WID4B	PUTHUVYPIN 1/2KM
9	WID5	KANNAMALLY
10	WID6A	CHELLANM SHORE
11	WID6B	CHELLANAM 1/2 KM
12	WID7	ANDHAKARNAZHI
13	WOS1	MUNAMABAM DIPNET
14	WOS3	KUZHUPILLY CANAL
15	WOS4	PUTHUVYPIN
16	WOS5	GCDA
17	WOS6	MATTANCHERY
18	WOS7	MARINE DRIVE
19	WOS8	NETTOOR CAGE

20	WOS9	KANNAMALY CANAL
21	WOS10	AROORKUTTY
22	WOS11	ANDHAKARNAZHI CANAL
23	WOS KBM	COCHIN BARMOUTH
24	WOS CC	CHELLANAM CANAL
25	WOS KCK	KUZHUPILLY CHEMEENKETTU
26	WOS MC	MUNAMBAM CAGE
27	VLS1	BARMOUTH
28	VLS2	VALLARPADAM
29	VLS3	WELLINGTON ISLAND
30	VLS4	AROOR
31	VLS5	VADUTHALA
32	VLS6	PERUMBALAM
33	VLS7	MURIMJAPUZHA
34	VLS8	THAVANAKKADAV
35	VLS9	THANNERMUKKAM
36	VLS10	KANNANKARA
37	VLS11	PATHIRAMANAL ISLAND
38	VLS12	MUHAMMA
39	VLS13	NORTH KAINAGIRI

- 1/2 KM means 1/2KM away from shore
- WID- code for sea water samples
- WOS -code for samples collected from associated canals of Vembanad lake
- VLS-code for water samples collected from different sample stations of Vembanad lake



**Fig 1:** Sampling Site Map

### Sample Processing

The total microbial load of the 1L water sample was concentrated by filtration onto membrane discs (pore size: 0.2 µm and diameter 47mm) made of mixed cellulose esters (Millipore; GTTP2500). The membranes after filtration were stored under sterile condition in fresh zip lock covers at

-20°C freezer until DNA extraction. All the samples were labelled properly.

### DNA Extraction from Filter paper

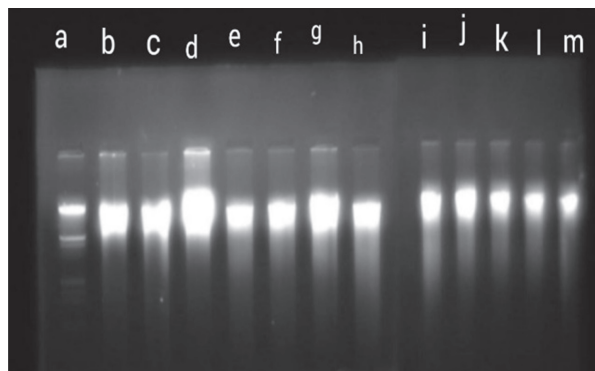
DNA was extracted from the sample using NucleoSpin Soil kit (Macherey-Nagel, Germany) with minor modifications (Vautier *et al.*, 2020). The membrane samples were cut into small pieces aseptically with the aid of sterile scissors and forceps and transferred into a microcentrifuge tube of carrying capacity 2 ml. 525µl of lysis buffer were added to the microcentrifuge tube containing chopped filter paper. It is vortexed in the presence of 2-3 sterile glass beads diameter 3mm for 1 minute. Then 5 µl lysozyme (50 mg/ml) was added and the tube was incubated at 37°C for 1 hour. After incubation to the same tube 60 µl 10% SDS and 3 µl Proteinase K (20 mg/ml) were added and mixed properly. The tube was again incubated; at 55°C for overnight in a dry bath. The next day, one volume of Chloroform–Isoamyl Alcohol (24:1) was added to the sample; mixed properly and then spun at 10,000xg for 10min at RT. Then the aqueous phase from the sample was transferred in to a fresh labelled tube. This step was repeated once again and then to the aqueous phase collected, 150 µl of Buffer SL3 was added and vortexed for 5 seconds and then the tube was incubated at 0-4°C for 4 min. The tube was spun at 11,000xg for 2 min and the clear supernatant was passed through spin column for Inhibitor removal. The collected flow through was treated with 250µl of Buffer SB; mixed by vortexing for 5 seconds and then transferred to spin column assembly for DNA capture. The membrane with DNA was washed four times; 1<sup>st</sup> time with Buffer

SB (500µl) and then with Buffer SW1 (500µl) and 3<sup>rd</sup> and 4<sup>th</sup> wash with buffer SW2(650µl). A Final spin at 11,000xg for 2 minutes was given to dry the spin column; then the collection tube was replaced with a fresh sterile Microcentrifuge tube. The DNA on the membrane was eluted with 60µl of Buffer SE. The quality of DNA was checked by agarose gel electrophoresis.

### PCR Based Screening of Samples for *Vibrio cholerae*

The presence of *Vibrio cholerae* in water samples were confirmed by PCR amplification with *Vibrio cholerae* specific primer pair. The PCR was set in a 20µl reaction volume containing 1 µl DNA (10–50 ng), 1µl each of Forward and Reverse primers (10 picomoles µl<sup>-1</sup>) and 10µl Emerald Amp GT PCR master mix (Takara). The cycling conditions used are as follows: initial denaturation at 95 °C for 2 min, followed by cycle denaturation at 95 °C for 40 s, annealing at 58-60 °C for 40 seconds, extension at 72 °C for 45 seconds for a total of 30 cycles and a final extension for 7 minutes at 72 °C. The success of PCR reaction was confirmed by running 5µl PCR product on 1% agarose gel (impregnated with ethidium bromide) at 120V; for ~45 minutes in 1X TAE Buffer. The image of the gel was recorded with the UV gel documentation system for future reference. 100bp DNA ladder from Thermo was loaded parallel to PCR products as a size marker. Three pairs of primers were used in this work. 1<sup>st</sup> set pair is specific for *Vibrio cholerae omp*(F5' CACCAAGAAGGTGAC TTTATTGTG 3'; R- 5' GAACTTATAACCAC CCGCG 3'). The 2<sup>nd</sup> and 3<sup>rd</sup> set primers are used for checking if the Cholerae positive samples contain any virulence genes in them; or they are simple environmental *Vibrio cholerae* which are non-pathogenic in nature. *toxR* (F- 5' CCTTCGATCCCCTAAGCAATAC 3'; R-5' AGGTTAGCAACGATGCGTAAG 3') and *ctx*(F-5' AACTCAGACGGGATTTGTTAGGC 3'; R-5' TCTCTGTAGCCCCTATTACGATGT 3') respectively( Krishna *et al.*, 2020).

## RESULTS



**Fig 2:** Representative images of genomic DNA extracted from filter paper

**Table 2** SAMPLE STATION DETAILS

COASTAL STATIONS		ASSOCIATED CANALS OF VEMBANAD LAKE STATIONS		VEMBANAD LAKE STATIONS	
WID	RESULT	WOS	RESULT	VLS	RESULT
WID 1 A	Positive	WOS 1	Positive	VLS 1	Negative
WID 1B	Negative	WOS 3	Positive	VLS 2	Negative
WID 2A	Negative	WOS 4	Positive	VLS 3	Negative
WID 2B	Positive	WOS 5	Positive	VLS 4	Negative
WID 3A	Positive	WOS 6	Positive	VLS 5	Negative
WID 3B	Negative	WOS 7	Positive	VLS 6	Negative
WID 4A	Negative	WOS 8	Positive	VLS 7	Negative
WID 4B	Negative	WOS 9	Positive	VLS 8	Negative
WID 5	Positive	WOS 10	Positive	VLS 9	Negative
WID 6A	Positive	WOS 11	Positive	VLS 10	Negative
WID 6B	Positive	WOS KBM	Positive	VLS 11	Negative
WID 7	Positive	WOS CC	Positive	VLS 12	Negative
		WOS KCK	Positive	VLS 13	Negative
		WOS MC	Positive		

DNA isolation was followed by PCR amplification to determine the prevalence of *Vibrio cholerae*. As shown in Table 2, out of 12 coastal water samples (WID), 7 tested positive for *Vibrio cholerae*. All the 14 water samples collected from the associated canals of Vembanad Lake (WOS) were positive for *Vibrio cholerae*, whereas none of the 13 water samples collected from Vembanad Lake (VLS) showed any presence of *Vibrio cholerae*.

The presence of *Vibrio cholerae* was confirmed by PCR amplification targeting a fragment of the outer membrane protein (*omp*) gene, which is specific to *Vibrio cholerae* (Fig 3).

In total, 39 water samples examined, 21 tested positive for the *omp* gene, confirming the presence of *Vibrio cholerae*. A summary comparison of sample station results is provided in Table 3.

**Table 3:** Table showing the comparison between different sample stations for the prevalence of *Vibrio cholerae*

Sampling Area	No: of samples examined	No: of samples showing positive results for the presence of <i>Vibrio cholerae</i>
Coastal waters	12	7
Associated canals	14	14
Vembanad lake	13	0

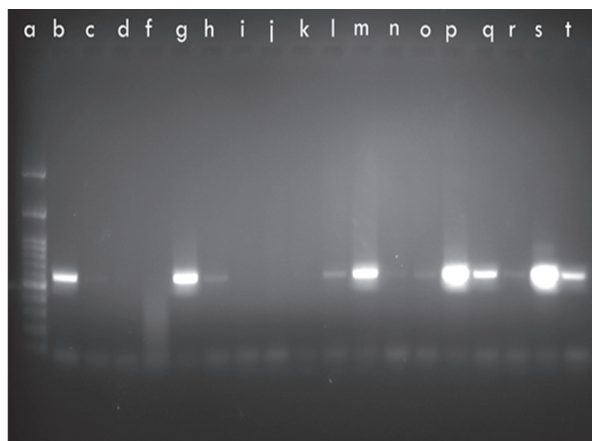
### PCR Based Screening to Check the Virulence of *Vibrio cholerae*

PCR amplification was repeated for the samples which shown the presence of *Vibrio cholerae*. The cholera positive samples were re-examined for the presence of *toxR* gene (Figure 4) and *ctx* gene (Fig 5). *toxR* genes are toxin regulator genes, which refers to the transcriptional regulatory genes that control the expression of cholera toxin genes (*ctx*).

As the table 4 indicates 1 out of 7 WID and 7 out of 14 WOS water samples showed the presence of *toxR* gene. None of the VLS samples were examined for the presence of *toxR* gene because of the complete absence of *Vibrio cholerae* in these water samples. And none of the water samples tested positive for the presence of *ctx* gene.

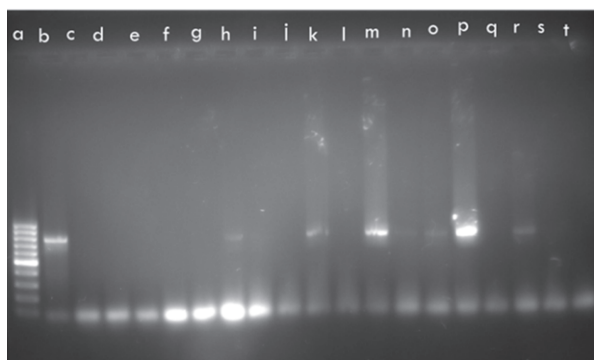
**Table 4:** Table showing the *comparison* between different sampling areas for the presence of *ToxR* Gene

Sampling Area	No: of Samples Analyzed	No: of samples in which tox R gene is present
Coastal waters	7	1
Associated canals	14	7
Vembanad lake	0	0



**Fig 3:** Representative image obtained after screening for *Vibrio cholerae*

Well (a). 100bp ladder; Well (b). Positive control; Well (c)-(t). test samples



**Fig 4:** Representative image obtained after screening for *toxR* Gene

Well (a). 100bp ladder; Well (b). Positive control; Well (c)-(t). test sample.

**Table 5:** Table showing the results obtained after PCR amplification for the prevalence of *omp* gene, *tox R* gene and *ctx* gene

SL NO	Sample code	V.cholerae <i>omp</i> gene Result	V.cholerae <i>toxR</i> gene Result	V.cholerae <i>Ctx</i> gene Result
1	WID1A	+	-	-
2	WID1B	-	-	-
3	WID2A	-	-	-
4	WID2B	+	-	-
5	WID3A	+	-	-
6	WID3B	-	-	-
7	WID4A	-	-	-
8	WID4B	-	-	-
9	WID5	+	-	-
10	WID6A	+	-	-
11	WID6B	+	+	-
12	WID7	+	-	-
13	WOS1	+	+	-
14	WOS3	+	-	-
15	WOS4	+	-	-
16	WOS5	+	+	-
17	WOS6	+	-	-
18	WOS7	+	+	-
19	WOS8	+	+	-
20	WOS9	+	-	-
21	WOS10	+	+	-
22	WOS11	+	+	-
23	WOS KBM	+	-	-
24	WOS CC	+	+	-
25	WOS KCK	+	-	-
26	WOS MC	+	-	-
27	VLS1	-	-	-
28	VLS2	-	-	-
29	VLS3	-	-	-
30	VLS4	-	-	-
31	VLS5	-	-	-
32	VLS6	-	-	-
33	VLS7	-	-	-
34	VLS8	-	-	-
35	VLS9	-	-	-
36	VLS10	-	-	-
37	VLS11	-	-	-
38	VLS12	-	-	-
39	VLS13	-	-	-



**Fig 5:** Representative image obtained after screening for *ctx* Gene

Well (a). 100bp ladder; Well (b)-(r) test samples

## DISCUSSION

Cholera is specifically caused by the bacterium *Vibrio cholerae*, particularly the toxigenic strains of the O1 and O139 serogroups. These strains produce cholera toxin (*ctx*), which is responsible for the severe watery diarrhoea characteristic of the disease. Other non-O1 and non-O139 strains of *Vibrio cholerae* exist, but they typically did not cause epidemic cholera. However, they can sometimes cause milder gastrointestinal infections or localized outbreaks (Van Kessel & Camilli, 2024). The prevalence of *Vibrio cholerae* was confirmed by the presence of *omp* gene, which acts as a reliable molecular signature for detecting the same, especially when combined with other virulence makers for comprehensive analysis. Among the 39 water samples, 21 water samples showed positive result for the presence of *omp* genes. 7 out of 12 coastal water samples, all the 14 water samples collected from associated canals of Vembanad lake and none of the water samples collected from different sampling stations of Vembanad lake shown the presence of *Vibrio cholerae*.

Environmental strains of the bacterium may inhabit in aquatic ecosystems and generally do not pose direct health risks unless they acquire virulence genes. Hence, the second part of the study were

extended to check the pathogenic potential of *Vibrio cholerae* isolates. The presence of *toxR* indicates that the isolates can potentially become pathogenic upon acquisition of temperate phage *ctx*; while a positive result in *ctx* PCR indicates that the organism already contains the toxic gene and so the particular water sample contains a pathogenic *Vibrio cholerae* in it. But out of the 21 samples only 8 were tested positive for the presence of *toxR* gene. And *ctx* were absent among all samples. Hence, it was concluded that the isolates were simple environmental *Vibrio cholerae* and non-pathogenic in nature. Environmental strains are predominantly non-toxigenic and exhibit significant genetic variability, which supports their long-term persistence (Lutz *et al.*, 2013).

The study was conducted during the pre-monsoon season, which creates favorable ecological conditions such as warmer temperature, moderate salinity and high nutrient loads that support the increased prevalence of *Vibrio cholerae*. Shackleton *et al.*, (2023) studied about the seasonality of cholera in Kolkata and the influence of climate and found out that, a bi-annual pattern of cholera cases with two peaks coinciding with the increase in temperature in summer and the onset of monsoon rains. Vembanad Lake's distinctive blend of ecological diversity, intense human activity, and complex environmental dynamics creates an ideal setting for studying *Vibrio cholerae*. Investigating its behavior within this ecosystem can provide insights for developing targeted public health strategies and enhancing sustainable water management practices. In the context of Vembanad lake, the largest lake in Kerala, Anas *et al.*, (2021) investigated the environmental reservoirs of *Vibrio cholerae* and highlighted the significant influence of variability on the dynamics of these reservoirs. Their findings emphasize that fluctuations in climatic factors can directly impact the quality of natural water resources, potentially affecting their safety for human consumption.

So, the present study offers valuable insights into environmental drivers of cholera outbreaks, supports risk mitigation efforts, and enhances public health preparedness. Future studies may face challenges due to climate change, induced alterations in rainfall patterns, temperature fluctuations, and salinity levels, which could impact *Vibrio cholerae* distribution and complicate long-term predictions. Additionally, increasing anthropogenic activities and land use changes around Vembanad lake may introduce new environmental variables, necessitating more complex and adaptive monitoring approaches.

## CONCLUSION

This study highlights the prevalence of *Vibrio cholerae* in coastal waters and associated canals of Vembanad Lake, with 21 out of 39 water samples testing positive for the *omp* gene, confirming the presence of the bacterium. Notably, all canal samples and 7 coastal samples showed contamination, while Vembanad Lake itself remained unaffected. Further analysis revealed the *toxR* gene in 8 samples, indicating potential pathogenicity, though the absence of the *ctx* gene suggests these strains are currently non-toxicogenic. The findings underscore the importance of continuous monitoring of *Vibrio cholerae* in aquatic ecosystems, especially in regions reliant on these waters for daily use. Understanding its distribution and potential virulence is crucial for predicting outbreaks, improving water management, and implementing preventive strategies. This study also highlights the broader implications of environmental changes on microbial dynamics, offering valuable insights for public health and ecosystem conservation. So, ensuring clean water sources is vital for avoiding the spread of cholera, making this study relevant.

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## **“MEDIA AND ECO TRAUMA: MEDIA AS A CATALYST FOR ECO TRAUMA, A CASE STUDY OF RECENT ENVIRONMENTAL DISASTERS IN KERALA AND NEIGHBOURHOOD AREAS”**

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### **ABSTRACT**

Eco trauma, the emotional and psychological distress caused by environmental disasters, is a growing concern in today’s world. Media, while playing a key role in informing the public during crises, often intensifies this trauma through sensationalized reporting and emotional exploitation. This paper explores the media’s negative impact during major environmental disasters in Kerala, and border areas including the floods and Wayanad landslides, also a focus on the tragic death of Arjun, the lorry driver at Shirur during landslide. By highlighting fear-driven coverage and neglect of core ecological issues like deforestation and poor land management, the study emphasizes the urgent need for ethical and sensitive disaster reporting. It calls for media to shift from creating fear to fostering awareness, offering solutions, and reducing the emotional toll of eco trauma.

**Keywords :** Eco-Trauma, Eco-Anxiety, Resilience, PTSD, Catalyst

### **INTRODUCTION**

#### **Eco Trauma: A Growing Concern**

Natural disasters, such as hurricanes, earthquakes, floods, and wildfires, can have profound emotional and psychological effects on individuals and communities. The immediate aftermath of these catastrophes is often marked by intense feelings of grief, loss, and trauma. Survivors frequently experience acute stress reactions, such as anxiety, insomnia, and difficulty concentrating. In many

cases, these emotional struggles persist long after the physical damage has been repaired. Post-traumatic stress disorder (PTSD) is a common outcome for individuals who have experienced or witnessed the destruction caused by such events. In addition, the psychological toll can affect entire communities, leading to collective anxiety and a sense of helplessness. This emotional burden may also manifest as a pervasive fear of future disasters, often referred to as “eco-anxiety,” which can be especially pronounced in regions prone to repeated environmental disasters. This emotional fallout from ecological catastrophes is what is often referred to as “eco trauma,” which has long-term implications for mental health and well-being.

Eco trauma refers to the profound psychological and emotional distress that individuals and communities experience as a result of environmental disasters. Many often environmental disasters lead to the destruction of homes, livelihoods, and the natural environment, leaving behind lasting effects on mental health of the victims. Grief, anxiety issues, depression, post-traumatic stress disorder (PTSD) are some of the various psychological symptoms faced by victims of eco-trauma. The trauma is not just from the immediate impact of the disaster but also from the long-term disruptions to one’s sense of security, belonging, and connection to the environment. This emotional suffering can be compounded by the loss of resources, displacement, and the uncertainty of recovery. Understanding eco trauma is critical in supporting the affected populations and helping them recover both physically and emotionally.

The media plays a pivotal role in informing the public during environmental crises, serving as a bridge between the event's occurrence and the public's response. The media's role during environmental crises is far-reaching. It goes beyond the mere reporting of facts; it involves educating the public, advocating for sustainable practices, scrutinizing government actions, and ensuring that the voices of those affected are heard. When used responsibly, the media can be a powerful force for positive change, helping communities heal, recover, and build a more sustainable future. However, the way media presents disasters can significantly influence the psychological state of the affected population. In many cases, media coverage, while well-intentioned, tends to sensationalize the crisis, focusing on shock-value images, emotional narratives, and graphic depictions of the disaster's aftermath.

This often amplifies the trauma rather than mitigating it, creating an atmosphere of fear, helplessness, and despair. Repeated exposure to traumatic media content can also contribute to vicarious trauma for those watching from a distance, deepening their own anxiety and distress. The media's responsibility extends beyond reporting the facts; it must also offer healing, hope, and a constructive perspective that empowers communities to rebuild.

## METHODOLOGY

The paper adopts a **descriptive research design**, where it documents the incidents of landslides, their causes, impacts, and individual cases like the death of Arjun. It also uses an **analytical component**, where it examines how media covered these incidents across **different platforms** — newspapers, online portals, and TV channels. The paper **combines environmental studies and media analysis**, making it **multidisciplinary** in nature.

### Media's Role in Amplification

The role of the media in reporting natural disasters is multifaceted, with the potential to either worsen

or aggravate the emotional impact of such events. Unfortunately, in many instances, media outlets have been criticized for sensationalizing disaster coverage. Graphic visuals, shocking imagery, and sensational headlines are often employed to capture the audience's attention and maintain high viewer ratings. However, this approach can inadvertently deepen the emotional distress of survivors and their families. While the intention may be to inform or raise awareness, the constant bombardment of distressing images and stories can reinforce feelings of powerlessness, fear, and anxiety. For example, repeated broadcasts of disaster scenes can evoke a sense of helplessness in viewers, making them feel as though they are witnessing the tragedy in real-time, even if they are far removed from the affected areas. Moreover, the media's focus on the most extreme and devastating aspects of a disaster, while neglecting stories of resilience and recovery, can distort public perception, leading to heightened anxiety and fear. This amplification of trauma through media coverage is a growing concern, as it can have long-lasting effects on both the immediate victims and broader audiences.

### Focus on Kerala's Environmental Disasters

Kerala has been severely impacted by several environmental disasters, most notably the catastrophic floods of 2018 and the landslide in Wayanad in 2024. The floods left thousands homeless, destroyed infrastructure, and led to widespread loss of life. The Wayanad landslide, which struck during heavy rains, buried entire families and led to significant loss of life and property. These disasters not only caused physical damage but also took a psychological toll on the survivors.

During both of these disasters, the media played a significant role in shaping public perception. While news outlets did provide valuable information about evacuation protocols, relief efforts, and the magnitude of the disaster, they often sensationalized the scale of destruction. Images of devastated landscapes, grieving families, and the chaos of

recovery were repeatedly broadcasted, which had the unintended consequence of deepening trauma for those directly affected. Survivors, many of whom were already traumatized by the loss of their loved ones and homes, were exposed to continuous media coverage, which prolonged their distress.

During the Kerala floods, the media often focused on showing shocking images of the destruction, like flooded homes and people in distress. These graphic visuals were shown repeatedly, making people more afraid and anxious. The headlines tended to be emotional, focusing on fear rather than explaining the science behind the disaster. This kind of coverage failed to help people understand what was happening or offer any hope, increasing the sense of panic rather than providing clarity and support. Instead of looking at the bigger environmental problems that led to the floods, like deforestation and poor planning, the media focused on blaming politicians for the management of dams. Political disputes and finger-pointing took the spotlight, while important issues like the long-term impact of climate change, bad land-use practices, and the lack of preparedness were ignored. This shift in focus prevented a serious conversation about how to prevent such disasters in the future.

Constantly seeing images of destruction and hearing about the floods created emotional distress for survivors and the public. People who had already suffered losses felt retraumatized by the ongoing news coverage. The unrelenting reminders of the disaster made it harder for communities to heal and rebuild. The media didn't focus on the mental health needs of survivors, which was a critical part of recovery that was overlooked in favor of more sensational news

The landslide in Wayanad, Kerala, mainly affected three villages—Punchirimattam, Chooralmala, and Mundakkai—out of the district's 49 villages. These areas saw significant destruction, with lives lost, homes damaged, and many people displaced.

Agriculture and infrastructure were severely impacted, and recovery efforts focused on these villages. However, media reports often generalized the disaster as affecting the entire district, creating the impression of widespread destruction.

Many news reports used dramatic phrases like “Wayanad in ruins” or “Wayanad wiped out,” which exaggerated the scale of the disaster. This caused confusion and fear, not only among the affected but also in other areas of Wayanad, where life was relatively unaffected. Residents of these unaffected areas had to deal with false perceptions of the situation, impacting local businesses and tourism, as potential visitors feared the district was unsafe.

This type of coverage can be linked to **eco-trauma**, which is often intensified by media reporting. The exaggerated portrayal of the entire district being devastated contributed to not just physical and economic distress, but also emotional trauma. The media's focus on emotional stories sometimes overlooked the specific areas that were impacted, preventing better-targeted relief efforts and fueling unnecessary panic. The fear and anxiety generated by exaggerated headlines can lead to feelings of helplessness, depression, and anxiety, especially among those in unaffected regions who were unfairly portrayed as victims. This can create a collective trauma, where the entire community struggles to recover mentally, not just physically.

While the media's role in raising awareness and generating support was crucial, a more accurate and focused approach would have been better. By clearly reporting which areas were affected and reassuring the public about the safety of the rest of Wayanad, the media could have alleviated unnecessary fears, supported tourism, and helped the affected communities more effectively. This situation underscores the need for responsible and careful reporting, particularly when the emotional impact of the disaster is involved.

Arjun, a lorry driver from Kannadikkal village in Kerala's Kozhikode district, tragically lost his life in a landslide that struck Shirur village in Karnataka's Uttara Kannada district on July 16, 2024. He was driving a timber-laden truck from Belagavi to Kozhikode when the disaster occurred. After a 72-day search operation, his body, along with the truck, was recovered from the Gangavali River on September 25, 2024.

The recovery of Arjun's body became a poignant event, drawing hundreds of people from his native village to pay their respects. The emotional scenes at his funeral underscored the profound loss felt by his family and the wider community. The tragedy left a deep emotional impact on the residents, highlighting the strong bonds and support systems within the community during times of grief.

This incident also exemplifies the concept of **eco-trauma**. The loss of life due to the landslide, compounded by the ongoing media coverage, contributed to a heightened emotional response from the affected community. The traumatic event had lasting effects on both Arjun's family and the villagers who were familiar with the dangers of truck driving in such conditions. Eco-trauma is intensified when the media, by focusing on the tragedy, amplifies the emotional burden on those involved.

Media outlets played an essential role in informing the public about the disaster and the prolonged search for Arjun. However, continuous coverage of the emotional struggles of Arjun's family and the community could have inadvertently increased the psychological distress experienced by those connected to the event. The media's emphasis on the tragic details, although crucial for raising awareness, may have fostered feelings of helplessness and grief, contributing to a sense of eco-trauma.

While the media's coverage brought attention to the risks faced by lorry drivers and the importance of improving safety measures, it also highlighted

how sensationalized reporting can exacerbate the emotional impact of such events. The portrayal of the tragedy, although necessary, underscores the need for balanced reporting that takes into account both the emotional toll on the affected community and the potential for collective trauma caused by overexposure to distressing news.

In the wake of Arjun's death, the community's grief serves as a reminder of the lasting emotional effects of environmental disasters, not only on those directly affected but also on the broader public. The media'

The media plays a significant role during environmental disasters, but its coverage can also contribute to the amplification of fear and anxiety among the public. Continuous, sensationalized reporting of floods, landslides, or other crises often focuses solely on the devastation, heightening the public's sense of helplessness. This repeated coverage causes affected communities to relive their trauma, deepening their distress. While it's essential for the media to inform the public, it must balance the delivery of news without sensationalizing the tragedy, thus avoiding further emotional harm to survivors.

The loss of trust is another consequence of sensationalized media coverage. When media outlets focus on dramatic images or exaggerate the severity of a disaster, they can undermine their own credibility. Inadequate attention to practical solutions for recovery leaves the public frustrated and disillusioned. The media must strive to provide more than just the disaster itself by offering clear, actionable information on recovery efforts, prevention, and long-term resilience. Moreover, the media can unintentionally fuel polarization during a crisis by focusing on political blame rather than fostering unity. This deepens societal divides and hinders collective recovery efforts. Instead, the media should emphasize the importance of community collaboration and collective action to

aid long-term recovery, helping to heal societal divisions rather than exacerbate them.

To address these challenges, the media must adopt ethical reporting practices. Respecting the privacy of victims and survivors while avoiding sensationalism is crucial. Compassionate storytelling can provide essential information without causing unnecessary harm. It's vital that journalists strike a balance between reporting the facts and being sensitive to the emotional impact on those affected by the disaster. Furthermore, responsible media coverage should highlight the root causes of environmental disasters, such as deforestation, poor land management, and unregulated construction. By focusing on systemic issues, the media can educate the public on the broader factors contributing to crises, encouraging prevention and mitigation strategies that empower communities to reduce future risks.

Promoting resilience and recovery is also a critical responsibility for the media. By focusing on stories of communities rebuilding and recovering, the media can inspire hope and motivate others to take action. Collaborating with environmental experts to provide accurate, constructive information can guide recovery efforts and support long-term resilience.

Finally, the media must commit to long-term reporting on climate change and sustainable development. Rather than focusing solely on the immediate aftermath of a disaster, the media should continue to highlight the long-term impacts of environmental changes. By shifting from short-term sensationalism to long-term solutions, the media can play a significant role in fostering awareness, driving change, and promoting a sustainable future.

## CONCLUSION

In conclusion, while the media plays a significant role during environmental disasters, it must adopt ethical reporting practices to minimize the emotional

toll on affected populations. Sensationalized and fear-driven coverage only amplifies ecotrauma, while responsible, balanced reporting can contribute to healing, recovery, and resilience. By focusing on the root causes of disasters, promoting long-term solutions, and highlighting stories of recovery, the media can shift from being a source of fear to becoming a catalyst for positive change, guiding communities towards a sustainable future.

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**Wayanad landslides: How two villages vanished overnight**

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## EXPLORING THE LINK BETWEEN STAFF NURSE AUTONOMY AND RETENTION IN NABH ACCREDITED HOSPITALS OF KERALA

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### ABSTRACT

This study explores the relationship between staff nurse autonomy and retention in NABH accredited hospitals in Kerala, India. With a sample of 200 staff nurses, the study found a significant positive correlation between staff nurse autonomy and retention. Factors influencing autonomy and retention included leadership style, organizational culture, professional development opportunities, workload, and nurse-physician collaboration. The study highlights the importance of staff nurse autonomy in promoting retention and improving patient outcomes, providing valuable insights for hospital administrators and policymakers to develop strategies that promote staff nurse autonomy and retention.

**Keywords:** Staff Nurse Autonomy, Retention, Patient outcomes, NABH accredited hospitals, Healthcare Quality.

### INTRODUCTION

The healthcare sector is facing significant challenges in providing high-quality patient care, particularly in terms of nurse staffing and retention. Staff nurses play a critical role in delivering patient care, and their autonomy and job satisfaction are essential for providing high-quality care. However, the nursing profession is facing a global shortage, with high turnover rates and decreased job satisfaction reported in many countries.

In India, the nursing shortage is particularly acute, with a shortage of over 2 million nurses projected by 2025. Kerala, a state in southern India, is known for its high-quality healthcare system, but it is not immune to the challenges facing the nursing profession. NABH (National Accreditation Board for Hospitals) accredited hospitals in Kerala are committed to providing high-quality patient care, but they face significant challenges in retaining staff nurses.

Staff nurse autonomy, defined as the degree of independence and decision-making authority granted to staff nurses, is a critical factor influencing job satisfaction and retention. Autonomous staff nurses are better equipped to provide high-quality patient care, but they require a supportive work environment and adequate resources to exercise their autonomy effectively.

This study aims to explore the relationship between staff nurse autonomy and retention in NABH accredited hospitals in Kerala, India. The study seeks to answer the following research questions:

1. What is the level of autonomy perceived by staff nurses in NABH accredited hospitals in Kerala, India?
2. What is the relationship between staff nurse autonomy and retention in NABH accredited hospitals in Kerala, India?
3. What factors influence staff nurse autonomy and retention in NABH accredited hospitals in Kerala, India?

The study's findings will provide valuable insights for hospital administrators, policymakers, and nursing leaders to develop strategies that promote staff nurse autonomy and retention, ultimately improving patient outcomes and healthcare quality.

## **MATERIALS AND METHODS**

### ***Study area***

The study was conducted in NABH (National Accreditation Board for Hospitals) accredited hospitals in Kerala, India. Kerala is a state located in the southwestern region of India, known for its high-quality healthcare system. The study focused on staff nurses working in NABH accredited hospitals in Kerala, which are recognized for their commitment to providing high-quality patient care.

## **METHODOLOGY**

### **Research Design**

This study employed a quantitative research design, using a descriptive correlational approach to examine the relationship between staff nurse autonomy, job satisfaction, and retention.

### **Population**

The study population consisted of staff nurses working in NABH accredited hospitals in Kerala.

### **Sample Size**

A sample size of 200 staff nurses was selected using a stratified random sampling technique.

### **Data Collection Tools**

1. **Autonomy Scale:** A standardized instrument was used to measure staff nurse autonomy.
2. **Job Satisfaction Scale:** A standardized instrument was used to measure job satisfaction among staff nurses.
3. **Retention Scale:** A standardized instrument was used to measure staff nurse retention.

4. **Demographic Questionnaire:** A questionnaire was used to collect demographic data from participants.

## **Data Analysis**

1. **Descriptive Statistics:** Means, standard deviations, and frequencies were used to describe the demographic characteristics of participants and the levels of autonomy, job satisfaction, and retention.
2. **Inferential Statistics:** Correlation analysis and regression analysis were used to examine the relationships between autonomy, job satisfaction, and retention.

## **RESULTS**

### **Demographic Characteristics of Participants**

The study found that the majority of participants (75%) were female, and the mean age was 28.5 years. Most participants (80%) had a Bachelor's degree in Nursing, and the average years of experience was 5.2 years.

### **Level of Autonomy among Staff Nurses**

The study revealed that staff nurses perceived a moderate level of autonomy (mean score = 3.5 out of 5). The highest autonomy scores were reported in the areas of patient care decisions (mean score = 4.1) and teamwork (mean score = 4.0).

### **Job Satisfaction among Staff Nurses**

The study found that staff nurses reported a moderate level of job satisfaction (mean score = 3.8 out of 5). The highest job satisfaction scores were reported in the areas of patient care (mean score = 4.3) and colleagues (mean score = 4.2).

### **Staff Nurse Autonomy Scale (SNAS):**

The overall mean score for autonomy was 3.8 out of 5, indicating a moderate level of autonomy.

The highest autonomy scores were reported in the areas of “I have the freedom to make decisions about patient care” (mean score = 4.2) and “I am able to plan and prioritize my work independently” (mean score = 4.1).

The lowest autonomy scores were reported in the areas of “I have the authority to delegate tasks to others” (mean score = 3.4) and “I have the opportunity to participate in decision-making processes” (mean score = 3.5).

### **Nurse Retention Scale (NRS):**

The overall mean score for retention was 4.1 out of 5, indicating a high level of intention to stay in the current position.

The highest retention scores were reported in the areas of “I am satisfied with my current job” (mean score = 4.3) and “I feel valued and respected by my organization” (mean score = 4.2).

The lowest retention scores were reported in the areas of “I have opportunities for professional growth and development” (mean score = 3.8) and “I would recommend my organization to others” (mean score = 3.9).

### **Relationship between Autonomy and Retention:**

There was a significant positive correlation between autonomy and retention ( $r = 0.65, p < 0.01$ ).

Nurses who reported higher levels of autonomy were more likely to report higher levels of intention to stay in their current position.

## **DISCUSSION**

The findings of the study highlights the importance of staff nurse autonomy in promoting retention and improving patient outcomes. The results indicate a significant positive correlation between staff nurse autonomy and retention, suggesting that hospitals that support staff nurse autonomy are more likely to retain their nurses.

The findings of the study are consistent with previous research, which has shown that nurse autonomy is a critical factor influencing job satisfaction and retention (Hendel et al., 2009; Lavoie-Tremblay et al., 2010). The results of the study also suggest that leadership style, organizational culture, professional development opportunities, workload, and nurse-physician collaboration are important factors influencing staff nurse autonomy and retention.

The findings of the study have implications for hospital administrators, policymakers, and nursing leaders. Hospitals can promote staff nurse autonomy by providing opportunities for decision-making, professional development, and collaboration with other healthcare professionals. Hospitals can also foster a supportive work environment by promoting a culture of respect, recognition, and open communication.

The limitations of the study include its cross-sectional design, which limits the ability to establish causality between staff nurse autonomy and retention. Future studies can build on this research by using longitudinal designs to examine the relationship between staff nurse autonomy and retention over time.

In conclusion, the findings of the study highlights the importance of staff nurse autonomy in promoting retention and improving patient outcomes. Hospitals can promote staff nurse autonomy by providing opportunities for decision-making, professional development, and collaboration with other healthcare professionals. By fostering a supportive work environment, hospitals can improve staff nurse retention, patient outcomes, and the overall quality of healthcare services.

## **SUMMARY**

This study explored the relationship between staff nurse autonomy and retention in NABH accredited hospitals in Kerala, India. The study found a

significant positive correlation between staff nurse autonomy and retention. Factors influencing autonomy and retention included leadership style, organizational culture, professional development opportunities, workload, and nurse-physician collaboration. The study highlights the importance of promoting staff nurse autonomy to improve retention, patient outcomes, and healthcare quality.

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## **BREXLIT AND NATIONAL FRAGMENTATION: POLITICAL CLIMATE IN ALI SMITH'S *AUTUMN***

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### **ABSTRACT**

Ali Smith's *Autumn*, often regarded as the first Post-Brexit novel, conveys the political and cultural disorientation that followed United Kingdom's referendum to leave the European Union. This paper explores how, in a sharply divided Britain, autumn symbolizes the disintegration of national identity, the breakdown of social cohesiveness, and the emergence of political ambiguity. It also examines Smith's use of narrative fragmentation to depict the nation's fractured status, drawing on the nascent genre of BrexLit. This study makes the case that Smith portrays Brexit as a cultural catastrophe with profound effects on identity and belonging, rather than just as a political event. The novel's interweaving of art, memory, and personal relationships is read as a form of resistance to nationalist narratives and post-truth politics.

**Keywords:** Brexit, BrexLit, political ambiguity

### **INTRODUCTION**

To choose whether to stay in or leave the European Union, the United Kingdom held a referendum on June 23, 2016. 51.9% of voters chose to leave, while 48.1% chose to stay, making the outcome close but clear. This choice, Brexit sparked heated political discussions and unpredictability in the economy, and cultural upheavals. Brexit was a reflection of deeper rifts in British culture, including issues of identity, globalization, and sovereignty, rather than just a policy decision.

British referendum was one of the biggest political upheavals in modern British history which caused social, economic, and cultural divisions throughout the nation. Following the vote, there was a pressing demand for narratives that could address the intricacies of this momentous occasion. Since then, a collection of modern literature that tackles the ambiguities, fears, and changes brought about by Brexit has come to be known as 'BrexLit.' Ali Smith's *Autumn*, the first fictional work in a four part series of novels can be considered as a classic in this genre. The novel, which was published just months after the referendum, offers a glimpse of a country in disarray, capturing both the short-term emotional shock of Brexit and its longer-term effects on national identity.

### **METHODOLOGY**

Brexit was essentially a debate about the identity of the British people and the kind of nation they wish to create, not just about economics or government. The EU was portrayed by nationalist rhetoric as an outside power that threatened British independence and customs. Brexit represented a desire for many voters to reclaim cultural identity and fight against perceived challenges from multiculturalism and globalization. In areas with sizable working class populations who felt left behind by economic shifts, this nationalism was especially evident. These regions frequently saw Brexit as a chance to take back authority over their own destiny and take on the elites of the metropolis.

The novel demonstrates the odd bond between Elisabeth, a woman in her early thirties, and Daniel Gluck, a centenarian. The linear representation of temporality is distorted to show the political urgency of the time. Smith's dedication to producing a living record of modern Britain is demonstrated by the work's publication that same year. She gives readers a prism to view the chaos and division surrounding the referendum by documenting its immediate aftermath. *Autumn* is positioned as a literary work that takes place in real time because of its urgency, which sets it apart from retroactive historical novels. Here, Brexit serves as a metaphor for a more profound cultural divide, highlighting conflicts between communities, classes, and generations.

Elisabeth's attempt to renew her passport is among the most memorable scenes in the novel. The scene's ridiculousness, her face is judged to be an unsuitable match for her own photo highlights the capricious authority of governmental bureaucracy. Identity regulation and contestation in post-Brexit Britain are metaphorically represented by this event. A larger nationalist desire to establish who belongs and who doesn't is reflected in the passport renewal procedure. Following Brexit, issues of immigration and citizenship took center stage in political discussions. Smith demonstrates how the exclusionary logic of borders dehumanizes people and splits communities through Elisabeth's experience.

At the beginning of the narrative, Elisabeth Demand, a 32-year-old arts lecturer, frequently visits Daniel Gluck, a 101-year-old man residing in a care facility. Here, the narrative chronology is deliberately woven to provide a certain aesthetic spirit. The story alternates between Daniel's dying dreams and Elisabeth's memories of their early friendship, which her mother disapproved of. "And I'm supposed to ask about what it was like where the neighbour grew up what life was like when the neighbour was my age. People's lives are private,

her mother said." (Smith 44-45) This story takes place on a broad time scale, as organic as the passing of the seasons. The readers are able to continuously read because of the play with time to immerse themselves in Elisabeth's universe in the new political scenario.

"Here's something else from another time, from when Elisabeth was thirteen that she also only remembers shreds and fragments of." (77) When the mother told her that an eighty five year old man cannot be her friend and why she cannot have normal friends, she replied. "It depends on how you'd define normal, Elisabeth said. Which would be different from how I'd define normal. Since we all live in relativity and mine at the moment is not and I suspect never will be the same as yours." (78) In the present Daniel is immobile, confined to bed, his dreams bring to the surface his deepest desires, as he imagines his broken body becoming metamorphosed into a coat of green leaves. After this surrealist blending of old and new, Smith takes us back into the present which is carefully ruled by linearity and fixities.

Brexit was really a debate about the identity of the British people and was not only about economics or governance. It may be seen as a reaction to long-standing discontent as well as a trigger for new political realities. It exposed underlying conflicts over the role of the state, globalization, and class inequality. It also changed the political landscape by giving populist movements more clout and upending established party systems. By looking at Brexit from both perspectives, we may better understand how one political event can change a country's course while simultaneously highlighting underlying social problems.

The deterioration of truth and the disintegration of substantive discourse are characteristics of the Brexit era. *Autumn's* disjointed narrative style and portrayal of disconnected interactions effectively convey this problem. The political atmosphere,

where facts are twisted and communication is boiled down to catch phrases, is echoed by characters talking over one another. Because it doesn't present a single authoritative viewpoint, the novel's non-linear structure reflects the unpredictability of the times. Smith compels readers to face the ambiguity and bewilderment that define the current political environment by upending the story itself. In a similar vein, Elisabeth and Daniel Gluck's relationship serves as an example of how narrative can unite people. Their generational relationship serves as a counterbalance to the external political division, proving that interpersonal relationships can endure even during difficult times.

The narrative clings to time, or else the readers would not have been able to understand it. "He wasn't old. She was right. Nobody truly old sat with their legs crossed or hugged their knees like that. Old people couldn't do anything except sit in front rooms as if they'd been stunned by stun guns." (50) This narration is not linear; each part leaps forward, backward, and sideways to different positions. The author's abstract fantasies on the passing of time sometimes sink into a stream-of-consciousness kind of obscurity in the narrative. "But now? The old man opens his eyes to find he can't open his eyes...he's got no real way of telling. He can't move." (89)

*Autumn* portrays a world characterized by dread and division, but it also implies that memory and art can be used as instruments of resistance. Pauline Boty, a Pop artist from the 1960s, is included to highlight the significance of reclaiming underrepresented voices. Elisabeth's interest in Boty's artwork represents how art has the power to subvert prevailing narratives and make room for different points of view.

In this way the political climate of 2016 is essential for interpreting *Autumn*. Without engaging with its context, the deeper significance of Smith's motifs,

such as fences, passports, and bureaucratic absurdities cannot be comprehended. Thus, in addition to being a political choice, the Brexit referendum caused a cultural upheaval. Strong nationalism appeals, disinformation, and divisiveness defined the campaign. Many saw it as a return to sovereignty, while others saw it as a turn toward isolationism. The nation was left shattered as a result of this separation, and animosity and mistrust dominated public conversation.

## CONCLUSION

Smith crafted a multi-layered piece that addresses both the issues of the day and universal human concerns by situating her story within a particular historical period. Thus, the novel's thematic depth and relevance as a work of modern literature are enhanced by the political context. This is a crucial literary reaction to the political turmoil caused by Brexit. Smith spoke about the fact that even if we make our own histories in a time frame, its working is not in that way. People hold their own diachronies. We carry our own past, futures and of the people who made us. We always think about the past and future in the present. In fact, the nonlinearity of time frame befits the framing of the unconventional relationship between Daniel and Elisabeth in a meticulous way. The novel illustrates the intricacies of a country facing uncertainty by examining bureaucracy, opposition, and fragmentation. *Autumn*, which is a part of the expanding body of BrexLit, asks readers to envision new kinds of connection and solidarity in addition to reflecting the fears of its time. Smith provides a vision of hope that contrasts with the polarizing language of modern politics by emphasizing the importance of art and narrative. By doing this, she exemplifies the timeless ability of literature to influence and interact with the public.

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