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Reparation or impairment? Youth perception of climate change, Ecological Grief, Eco-anxiety and solastalgia in Alappuzha

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Abstract— *This article critically examines the growing impact of climate change as a result of human activities and explores its multifaceted consequences on the environment, human health, and society. It outlines the differences between weather and climate, attributing the accelerated pace of climate change predominantly to anthropogenic factors such as fossil fuel consumption, deforestation, and industrial emissions. The article discusses the severe repercussions of climate change in India, particularly in Kerala, highlighting recent extreme weather events, rising temperatures, and policy responses such as the introduction of the state's first environmental budget. The emotional and psychological responses to ecological degradation—captured through concepts like eco-anxiety, eco-grief, and solastalgia—are explored, emphasizing their rising significance among youth. The study focuses on Alappuzha's youth and their perceptions of climate change, integrating survey data within a theoretical framework that includes environmental psychology and climate activism. "Reparation or Impairment? Youth Perception of Climate Change, Ecological Grief, Eco-Anxiety and Solastalgia in Alappuzha," adopts a mixed-methods approach to assess awareness, concern, and the emotional impact of environmental changes. The findings suggest a growing urgency to address not only the physical but also the mental health challenges posed by climate change, reinforcing the need for comprehensive policy and community-based action.*

Keywords— ***Climate change, Anthropocene, Ecological Grief, Eco- Anxiety, Solastalgia.***

I. INTRODUCTION

"Is climate change the greatest crisis humanity has ever faced or an exaggeration that is unlikely to cause much harm? Who or what is responsible? What, if anything, can we, should we, do about it?"(Hubbell, Ryan. Introduction to Environmental Humanities, 2020, p. 20.)

Climate change has emerged as one of the most pressing global challenges, profoundly impacting natural ecosystems and human societies. Human activities—particularly the burning of fossil fuels, deforestation, and industrial processes—have accelerated global warming, contributing to unpredictable and extreme weather events. While natural phenomena like volcanic eruptions and solar variations play a role, the current magnitude and pace of climate change are primarily driven by anthropogenic causes. These human-induced changes threaten biodiversity, destabilize ecosystems, and pose serious risks to economic and social systems globally.

The distinction between weather and climate is critical. Weather reflects daily atmospheric conditions, whereas climate refers to long-term patterns over at least 30 years. Understanding this distinction helps to comprehend the long-term effects of human impact on the Earth's climate systems. In India, the effects of climate change are increasingly evident. In 2024, the nation experienced record-breaking temperatures, including Kerala's highest in years, followed by intense monsoons. This climatic volatility led to natural disasters such as floods, landslides,

and wildfires, prompting Kerala to introduce an Environmental Budget to tackle ecological issues.

The 2018 Kerala floods serve as a tragic reminder of climate unpredictability, where excessive rainfall displaced over a million people. In 2024, similar patterns reemerged, highlighting the link between climate change and extreme weather. These abrupt transitions from heatwaves to heavy rainfall disrupt agriculture, endanger infrastructure, and affect fisheries—an essential livelihood in coastal areas like Alappuzha. Fishermen now face new challenges as rising sea temperatures and ocean acidification alter marine ecosystems, forcing shifts in traditional fishing practices.

Beyond physical impacts, climate change also triggers profound emotional responses. Theories such as eco-anxiety, eco-grief, and solastalgia capture the psychological toll of witnessing environmental degradation. Eco-anxiety describes the chronic fear of environmental collapse, while eco-grief expresses mourning for the loss of ecosystems, and solastalgia captures the distress caused by ecological changes in one's home environment. These emotional responses, particularly among youth, highlight a growing psychological burden tied to the awareness of climate change and perceived global inaction.

Movements led by youth, like Greta Thunberg's climate strikes, underscore a rising tide of environmental activism. However, many young people experience compassion fatigue—emotional exhaustion caused by ongoing concern and a lack of tangible progress. The dissertation titled "Reparation or Impairment? Youth Perception of Climate Change, Ecological Grief, Eco-Anxiety and Solastalgia in Alappuzha" explores this complex emotional and psychological terrain through a survey-based study. It investigates how young adults in Alappuzha perceive climate change, and how concepts such as ecological grief and solastalgia manifest in their lives.

II. EVOLVING THREAT

Climate change is increasingly recognized as one of the most pressing global threats to humanity. It demands urgent attention due to its anthropogenic causes, such as the burning of fossil fuels, deforestation, and industrial activities. These drivers contribute to significant disruptions in climate systems, with wide-ranging and profound effects on human societies. The impacts manifest through health risks, economic instability, threats to food security, and forced migration—challenges that are interconnected and intensify one another.

Among the most immediate and concerning impacts of climate change is its toll on human health. Rising temperatures lead to a surge in heat-related illnesses and fatalities, with vulnerable groups such as the elderly, children, and individuals with pre-existing conditions facing the highest risks. Heatwaves are occurring more frequently and with greater intensity, straining health systems and increasing mortality. In parallel, climate change exerts considerable pressure on global economic systems. Natural disasters like hurricanes, floods, and droughts inflict severe damage on infrastructure and disrupt business operations, leading to significant economic losses. Agriculture is particularly affected; changes in temperature and precipitation patterns compromise crop yields and threaten farmers' livelihoods. Prolonged droughts may result in crop failures, while frequent extreme weather events can decimate harvests, endangering food security and exacerbating poverty.

Food security is increasingly compromised as climate change alters agricultural productivity and disrupts fisheries. Shifting climate patterns disturb growing seasons, reduce yields, and raise the incidence of pests and diseases. These factors diminish the availability of food and drive up prices. Fisheries are similarly at risk due to ocean warming and acidification, which affect marine ecosystems and reduce fish populations, threatening food supplies in regions dependent on seafood. Climate change is also a catalyst for migration and displacement. Sea-level rise, extreme weather events, and gradual environmental degradation force populations to relocate, with coastal areas particularly vulnerable. The phenomenon of climate refugees is emerging in places like the Pacific Islands, where entire communities face relocation. Such displacement can strain resources, escalate social tensions, and present challenges in humanitarian response and resettlement.

Disparities in the impact of climate change are stark, with marginalized populations bearing a disproportionate burden. Those in developing countries often lack the resources needed to adapt or respond effectively. This inequality exacerbates existing vulnerabilities and social inequities, as disadvantaged communities tend to reside in high-risk areas and have limited access to protective infrastructure or healthcare. An example of climate change's disproportionate effects is evident in the July 2024 disaster in Wayanad, Kerala, where heavy monsoon rains caused devastating landslides. In Chooralmala village, three major landslides in four hours destroyed homes and infrastructure, leading to over 400 deaths and many more missing. The rescue efforts, hampered by rough terrain and the flooding Chaliyar River, highlighted the vulnerability of marginalized communities in climate-sensitive regions.

Public perceptions of climate change vary across different regions, influenced by factors like education, political

ideology, and firsthand experience with climate events. These perceptions are vital because they shape support for climate policies, drive political action, and influence personal behaviors. In general, people in regions more directly affected by climate impacts tend to express greater concern. However, perceptions about the causes of climate change often diverge, especially along political lines. While scientists overwhelmingly agree that climate change is primarily driven by human activities, public belief is more fragmented. Conservatives, especially in certain countries, tend to express more skepticism, while liberals and progressives are typically more accepting of scientific consensus.

Political polarization significantly affects public understanding of climate change. Media framing plays a crucial role; the way news outlets present climate issues—whether as an immediate crisis or a distant concern—can influence the urgency with which the public responds. The spread of misinformation, particularly via social media, compounds the problem. Myths that climate change is a natural occurrence or not as serious as reported diminish public awareness and delay necessary action. Cultural norms also influence responses. Collectivist societies may be more inclined toward communal climate action, whereas individualist societies often emphasize personal responsibility and resist regulatory approaches.

The evolution of public perception has been shaped by key historical milestones. In earlier decades, climate awareness was mostly confined to scientists and environmentalists. The 2000s marked a turning point as global scientific consensus solidified and public discourse expanded. Western countries, supported by policy initiatives and media coverage, began to view climate change as urgent. In contrast, skepticism lingered in regions like the United States, where political divisions heavily influenced public opinion. In the Global South, tangible effects such as food insecurity and natural disasters drove concern, and a narrative of climate justice emerged, highlighting the disproportionate contributions of industrialized nations to global emissions.

Youth-led movements have played a pivotal role in increasing awareness and demanding action. Campaigns such as Fridays for Future, initiated by Greta Thunberg, have spotlighted the emotional and psychological toll of climate change. Terms like ecological grief, eco-anxiety, and solastalgia have emerged to describe the mental health impacts experienced, especially among younger generations. Ecological grief refers to mourning the loss of ecosystems, species, or landscapes due to environmental change. It is a legitimate emotional response often experienced by individuals deeply connected to nature or affected by ecological degradation. This grief can manifest even among those who are not directly impacted by specific disasters, reflecting a broader concern for planetary health.

Eco-anxiety, a term describing chronic fear of environmental catastrophe, has become increasingly common as climate disasters multiply and governmental inaction persists. It is especially prevalent among youth, who face the prospect of inheriting a damaged planet. The American Psychological Association formally recognized eco-anxiety as a public health concern in its 2017 report, underscoring its significance. This condition involves anxiety, despair, and feelings of helplessness regarding the planet's future, driven by constant exposure to alarming environmental news and insufficient policy responses. Solastalgia, distinct from nostalgia, describes the distress caused by changes in one's home environment. It captures the pain of witnessing the degradation of a once-familiar place, such as a local forest or coastline, that no longer provides solace due to environmental change.

The psychological impact of climate change is not new. Early environmental thinkers, including Rachel Carson in Silent Spring, described the emotional weight of environmental destruction, even if terms like ecological grief had not yet been coined. It wasn't until Canadian researchers Ashlee Cunsolo and Neville R. Ellis formally introduced "ecological grief" in 2018 that the concept gained academic legitimacy. They defined it as grief tied to real or anticipated ecological losses. This recognition has significant implications, legitimizing the emotional toll of climate change and emphasizing the need for both mental health support and systemic environmental action.

These psychological phenomena reflect a deeper, more personal connection to the climate crisis. As awareness grows, the emotional dimensions of climate change are becoming more prominent in both public discourse and policy discussions. Addressing these mental health impacts requires a holistic approach that combines psychological support with climate mitigation and adaptation strategies. In recognizing ecological grief and eco-anxiety as valid responses, societies can foster stronger emotional engagement with climate issues, potentially inspiring more meaningful and sustained action.

Younger generations, particularly Millennials and Gen Z, are experiencing eco-anxiety more intensely due to their awareness of the long-term impacts of climate change, which they expect to face throughout their lives. This concern has given rise to emotional responses such as climate grief and solastalgia. Solastalgia, introduced by Australian philosopher Glenn Albrecht in 2003, describes the distress people feel when their home environment is being degraded while they remain in place. Unlike

nostalgia, which mourns a lost past, solastalgia reflects the pain of watching one's surroundings deteriorate. Albrecht developed this concept after observing the emotional impact of coal mining on communities in New South Wales, Australia. It highlights the deep emotional connection people have with their environment and the psychological toll when that environment is altered or destroyed. Solastalgia is increasingly relevant in the Anthropocene, as environmental crises like deforestation, pollution, and climate change intensify, triggering emotional distress in both rural and urban populations. Indigenous communities are especially vulnerable due to their cultural ties to the land, and urban youth also face solastalgia due to rising temperatures, pollution, and loss of green spaces. This distress can manifest as helplessness, grief, or anxiety. Eco-anxiety, the chronic fear of environmental catastrophe, is widespread among youth who feel overwhelmed by the scale of climate change and disillusioned by inadequate action from global leaders. These emotional burdens often result in anxiety-related symptoms such as insomnia and depression. Many youth also experience ecological grief, mourning not only the physical destruction of nature but also the cultural and emotional ties to these environments. Addressing these mental health impacts requires support systems in schools and communities, as well as opportunities for youth to engage in environmental activism, which can foster a sense of empowerment and reduce despair. Recognizing the psychological toll of environmental degradation on younger generations is essential for shaping effective and compassionate climate responses.

YOUTH PERCEPTION OF CLIMATE CHANGE

Youth Perception of Climate Change in Alappuzha, Kerala

Youth in Alappuzha, a coastal district in Kerala, display strong awareness of environmental issues, shaped by firsthand experiences with rising sea levels, erratic weather, and frequent flooding. Many report eco-anxiety, ecological grief, and solastalgia—distress over changes in their familiar environment—indicating deep emotional responses to climate change.

III. RESEARCH METHODOLOGY

A survey was conducted among students from five colleges in Alappuzha, yielding 350 responses (75.5% female, 24.5% male). The aim was to assess youth perceptions of environmental degradation. Results show most youths are aware of environmental crises and attribute them primarily to human activities.

Awareness of Climate Change

When asked how often they hear about climate change, 73.8% said "often," 21.4% "rarely," and 4.8% "very rarely." Frequent exposure enhances awareness, while limited exposure may hinder understanding and engagement.

Sources of Information

Most youths (69.8%) get climate change information from social media, followed by news channels (20.2%) and newspapers (8.3%). Social media plays a vital role due to its accessibility and engaging content. Traditional media, despite challenges, also helps by offering in-depth reporting and real-time updates. A small percentage learn through formal education or self-study.

Belief in Climate Change

91.7% believe climate change is real, while 7.7% are uncertain, and a small minority remain unconcerned. Beliefs influence willingness to adopt sustainable practices and support policy action. Misinformation by politically or economically motivated groups can lead to denial or skepticism.

Human-Caused Climate Change

Only 66.1% accept that human activity causes climate change, 27.9% are unsure, and 6% deny it. Understanding anthropogenic causes is key to supporting effective policy and behavior changes.

Climate Change as a Defining Crisis

63% view climate change as the defining crisis of our time, 29.1% are unsure, and 8% do not share this concern. Climate change impacts biodiversity, public health, and economies, making it a multifaceted global challenge requiring urgent action.

Concern for the Planet's Future

87.7% are worried about the planet's future, with smaller portions uncertain (5.7%) or unconcerned. This concern drives youth activism and demand for stronger climate action.

Personal Importance

For 51.9%, climate change is "very important" personally, while 43.6% find it "important." Direct experiences with extreme weather, health impacts, and economic concerns make the issue more relatable and urgent.

Action Against Climate Change

67% believe action is possible, 25.9% are unsure, and 7.1% believe nothing can be done. Addressing climate change requires coordinated action across all levels—individual to global—including renewable energy adoption, policy enforcement, sustainable practices, and public awareness.

Energy Efficiency and Conservation

Promoting energy efficiency and conservation is vital in reducing emissions. Energy-efficient technologies like LED lighting, smart appliances, and electric vehicles help lower consumption. Behavioral changes—such as carpooling, using public transport, and adopting efficient household habits—also contribute significantly (IPCC 119).

Government Action and Global Cooperation

Strong government policies and international collaboration are essential. Governments can implement carbon regulations, subsidize renewables, and use carbon pricing to curb emissions. Agreements like the Paris Agreement coordinate global climate action (UNFCCC 23).

Public Awareness and Education

Raising public awareness through education and campaigns is key. Teaching people how daily habits—like energy use, travel, and diet—affect the environment can inspire more sustainable behavior (IPCC 125).

Forests and Agriculture

Forests play a critical role in absorbing carbon dioxide. Conservation, reforestation, and afforestation help address climate change while supporting biodiversity (FAO 68). Sustainable farming practices, like organic farming and agroforestry, can reduce emissions and enhance carbon storage (IPCC 150).

Youth Action on Climate Change

While 67% of youth believe they can act against climate change, only 41.3% report actually taking action. 29.3% said "maybe," and 28.8% said "no," indicating a gap between concern and action.

Lifestyle Changes

Only 43.3% of youth reported changing their lifestyle to reduce their climate impact. These changes include using energy-efficient appliances, reducing waste, eating plant-based diets, conserving water, and choosing sustainable transport.

Government Responsibility

69.5% of youths believe it's very important for governments to act on climate change, 24.4% say it's important, and 6% believe it's not important. Governments can lead through legislation, funding clean energy, and building resilient infrastructure.

Eco-Anxiety and Sadness

88% of youth feel sad about environmental degradation. Constant media exposure and real-world climate impacts intensify eco-anxiety—chronic stress over ecological threats. This sadness often motivates activism and sustainable engagement.

Ecological Grief

78.1% of youth report ecological grief—deep emotional distress over environmental loss. This grief stems from the destruction of ecosystems and traditional ways of life, especially in nature-dependent communities, and can lead to depression or increased activism.

Emotional and Existential Distress

66.4% of youths experience emotional or existential distress due to environmental change. Many feel helpless and anxious about their future, which motivates them to push for climate action despite the emotional toll.

IV. CONCLUSION

Climate change is one of the most critical challenges of our time, involving long-term alterations in global or regional climate patterns, particularly the rise in average global temperatures. Predominantly driven by human activities—such as fossil fuel combustion, deforestation, and industrial processes—these practices elevate greenhouse gas levels, intensifying the greenhouse effect. The consequences include extreme weather events, sea level rise, and ecosystem disruptions (IPCC; NASA).

Despite scientific consensus, climate change remains contested in public discourse, partly due to misinformation from groups like the Nongovernmental International Panel on Climate Change (NIPCC), which downplays the issue (Idso et al.). Public concern exists, but cultural beliefs and ideological divides influence how climate change is interpreted (Yale; Hulme). Activist Greta Thunberg exemplifies the emotional and moral complexities surrounding climate action and illustrates the role of individual and collective advocacy.

Legal cases such as the 2015 lawsuit by Our Children's Trust highlight youth claims that governmental inaction on climate change violates their constitutional rights. These legal efforts underscore generational inequities, as younger people disproportionately bear the consequences of past and present environmental negligence. Alongside this, phenomena such as "climate fatigue"—a feeling of helplessness from constant exposure to climate news—and "climate denialism"—fueled by corporate interests—further complicate public engagement (Oreskes & Conway; Norgaard; Dunlap & McCright).

With increasing climate instability, long-term data collection becomes essential, as past climate patterns can no longer reliably predict the future. Terms like "climate chaos" and "climate weirding" reflect the unpredictable conditions emerging from ongoing changes.

Human civilization developed during the Holocene, an epoch of climatic stability. However, rising greenhouse gas emissions from human activity now threaten this balance.

This rapid, anthropogenic change is outpacing ecosystems' natural ability to adapt, with visible effects in vulnerable areas such as polar regions and coral reefs, while wealthier societies remain relatively insulated.

The Holocene, which began about 11,650 years ago, may be transitioning into the Anthropocene—a proposed epoch where human activity significantly alters Earth's systems. Scholars like McNeill and Engelke categorize human history into organic and fossil energy eras. While the Industrial Revolution marked a major shift, the "Great Acceleration" post-1945 saw a global surge in fossil fuel use and environmental impact. Other historians trace the Anthropocene's origins to events like the Columbian Exchange of 1610. Despite differing views, consensus holds that a small portion of humanity has driven these changes, challenging the idea that the Anthropocene is the work of all humankind.

From an Environmental Humanities perspective, defining the Anthropocene's exact start is less important than recognizing human activity as a geophysical force. The focus is on consequences, responsibility, and ethical action. Debates continue over whether the term "Anthropocene" promotes accountability or reflects harmful anthropocentrism. Environmental humanists advocate for behavioral and cultural changes that prioritize sustainable living over consumer-driven desires.

The article "Reparation or Impairment? Youth Perception of Climate Change, Ecological Grief, Eco-Anxiety and Solastalgia in Alappuzha" explores how youth in this region experience and respond to climate change emotionally and psychologically. The study reveals that young people in Alappuzha are deeply aware of environmental changes and report high levels of ecological grief, eco-anxiety, and solastalgia.

Ecological grief refers to the sorrow from environmental loss, such as the degradation of ecosystems or extinction of species. It reflects a profound emotional connection to nature and is often intensified by climate change (Albrecht et al.). This grief can affect individuals and communities, emphasizing the need for emotional support and mental health interventions (Cunsolo Willox et al.).

Eco-anxiety manifests as chronic worry and fear about environmental destruction and insufficient climate action. Symptoms include anxiety, insomnia, and helplessness, highlighting the mental health impacts of environmental awareness (Clayton et al.; Gordon et al.).

Solastalgia, coined by Glenn Albrecht, describes the distress people feel when their local environments undergo negative changes. Unlike nostalgia, which mourns a lost past, solastalgia is rooted in the loss of the present, impacting personal identity and one's sense of belonging (Albrecht).

Youth in Alappuzha express concern over rising sea levels, extreme weather, and the degradation of wetlands and forests they grew up with. Their grief and anxiety underscore the emotional burden of climate change, often overlooked in broader discussions. These findings emphasize the urgent need for mental health support and community engagement in climate adaptation strategies.

Awareness among youth is shaped by education, media, and personal experience. Climate education fosters understanding and motivates advocacy (Levinson & Turner). Media influences awareness, with coverage and documentaries inspiring concern and action (Nisbet). Personal experiences—like flooding or heatwaves—make climate change tangible, often sparking stronger engagement (Graham et al.).

The psychological toll extends to fears about health, safety, and economic stability. Environmental degradation also disrupts cultural identities, especially in communities closely tied to their ecosystems (Cunsolo Willox et al.). This can lead to isolation and a weakened sense of community, intensifying emotional strain (Norgaard).

At the root of the climate crisis is the philosophical separation of humanity from nature, shaped by cultural and religious ideologies that place humans above the natural world. This anthropocentric view justifies exploitation and ignores the intrinsic value of nature. The resulting environmental degradation—deforestation, pollution, and resource overuse—is both a physical and ethical crisis.

To address this, a shift in worldview is needed—one that acknowledges the interconnectedness of all life and the dependence of human well-being on ecological health. Sustainable practices and policy changes must be guided by this integrated perspective.

The Alappuzha youth study illustrates how climate change impacts not just ecosystems but emotional and cultural lives. By understanding their perceptions and psychological responses, this research emphasizes the need for holistic approaches to climate action—ones that address both environmental and mental well-being.

The study titled "Reparation or Impairment? Youth Perception of Climate Change, Ecological Grief, Eco-Anxiety and Solastalgia in Alappuzha" offers critical insights into how youth in Alappuzha perceive and emotionally respond to climate change. It highlights that young individuals are not only aware of the environmental impacts but also experience significant psychological effects, including ecological grief, eco-anxiety, and solastalgia. These emotions stem from witnessing

environmental degradation, personal experiences with climate events, and concerns about the future. Education, media, and direct environmental experiences play a vital role in shaping their perceptions. The findings emphasize the need for targeted mental health support and community engagement to address these emotional challenges.

The study also reveals a deeper philosophical issue: the perceived separation between humans and nature. This worldview has led to environmental harm by promoting an anthropocentric mindset that justifies exploitation. Addressing the climate crisis thus requires a fundamental shift in perception—recognizing the interconnectedness of human and ecological well-being. Adopting a more integrated, respectful relationship with the natural world is essential for fostering sustainable practices and ensuring long-term environmental and psychological health.

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