

Climate Change and Mental Health: Assessing the Hidden Economic Costs

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ABSTRACT

Climate change is increasingly recognised as more than an environmental crisis; it is also a profound public health and economic challenge. While research has widely documented its physical health consequences, the psychological impacts remain underexplored, particularly their economic dimensions. This paper examines the intersection of climate change, mental health, and economic outcomes, presenting the hidden costs that extend beyond immediate physical damage. Evidence from a systematic review reveals that mental disorders linked to climate change contribute to reduced productivity, absenteeism, and presenteeism in the workforce, particularly in climate-sensitive sectors such as agriculture and construction. Furthermore, climate-induced psychological distress exacerbates poverty cycles, increases reliance on social safety nets, and undermines long-term economic stability. The paper argues for the urgent integration of mental health into climate adaptation and economic planning. Policy solutions include strengthening mental health systems, advancing climate-resilient infrastructure, promoting workplace wellness programmes, and enhancing global financing mechanisms. By situating mental health at the centre of climate discourse, this study underscores that protecting psychological well-being is not only a moral imperative but also an economic necessity for building resilient and sustainable societies in the era of climate change.

Keywords: Climate change, Mental health, Economic costs, Resilience, Adaptation

INTRODUCTION

Climate change has emerged as one of the most pressing challenges of the 21st century, affecting every dimension of human life. Once regarded mainly as an environmental problem, it is now understood as a multidimensional crisis with social, political, and economic consequences (Intergovernmental Panel on Climate Change [IPCC], 2022). Rising global temperatures, the intensification of extreme weather events, shifts in rainfall patterns, and the melting of polar ice caps have drawn widespread attention from policymakers and scientists alike. Yet, while the material and physical consequences of climate change, such as food insecurity, infrastructure damage, and biodiversity loss, have been extensively studied (Muluneh, 2021; Nguyen et al., 2023), its impacts on mental health and the economic implications of those impacts remain comparatively underexplored. This essay sets out to address that gap by unveiling how climate change contributes to mental health burdens and how these burdens translate into economic costs for individuals, communities, and nations.

At its core, climate change undermines the very foundations of human security. The physical impacts ranging from prolonged droughts to flash floods are visible and quantifiable, but the invisible psychological scars often persist long after the waters recede or the fires are extinguished (Cunsolo & Ellis, 2018). Survivors of hurricanes,

wildfires, or cyclones frequently experience trauma, anxiety, and depression, and these conditions can impair their ability to function productively in their daily lives. For farmers facing crop failure due to erratic weather, or for young people worried about an uncertain environmental future, the psychological distress can manifest as eco-anxiety, hopelessness, and, in extreme cases, suicidal ideation (Clayton et al., 2017). These human experiences underscore the reality that climate change is not only reshaping ecosystems but also reshaping the psychological landscapes of individuals and communities.

Mental health is often described as the “silent dimension” of climate change. Unlike physical illnesses such as heatstroke or malaria, which have established biomedical pathways linked to climate variability, psychological distress tends to emerge through complex, indirect, and long-term channels (Hayes et al., 2018; Nkomo & Adanlawo, 2024). For instance, a flood can displace a family not just physically, but also undermine their sense of stability and belonging. Similarly, recurrent droughts can weaken cultural identities tied to farming, creating what scholars have called *ecological grief*, a profound mourning for lost ways of life and degraded environments (Cunsolo et al., 2020). These forms of psychological suffering are less visible than physical injuries, yet they carry long-lasting implications for both social well-being and economic productivity.

From an economic perspective, the mental health consequences of climate change generate costs that extend far beyond individual suffering. The World Health Organization (WHO, 2022) estimates that depression and anxiety disorders already cost the global economy over \$1 trillion annually in lost productivity, a figure likely to rise as climate stressors intensify. When workers struggle with stress, trauma, or burnout linked to climate shocks, they are less able to contribute effectively to the economy, leading to absenteeism, presenteeism (being at work but underperforming), and, in severe cases, permanent withdrawal from the labour market (International Labour Organisation [ILO], 2019). Moreover, the treatment of mental health conditions requires significant financial resources, increasing the burden on public health systems and household incomes alike (Ngo, 2021). For low- and middle-income countries that already face resource constraints, these costs represent a serious challenge to sustainable development.

The economic dimension of climate-related mental health impacts can be conceptualised in four key ways. First, there are direct costs, such as increased expenditure on psychiatric care, medication, and counselling services following climate disasters. Second, there are indirect costs, such as productivity losses in agriculture, construction, and other climate-sensitive sectors where stress and trauma reduce efficiency. Third, there are opportunity costs, as governments divert limited resources to disaster recovery and mental health support, leaving fewer funds available for long-term investments in education, infrastructure, or innovation. Fourth, there are social costs, such as the erosion of community cohesion and increased reliance on welfare systems, which weaken broader economic resilience (Watts et al., 2021). Together, these costs demonstrate that climate change cannot be viewed solely through an ecological or biomedical lens; it must also be understood as an economic challenge with deep social implications.

The introduction of the concept of *eco-anxiety* into mainstream discourse reflects the growing recognition that climate change is altering psychological landscapes even for those not directly exposed to disasters (Clayton et al., 2017; Pihkala, 2020). Young people in particular report high levels of worry and despair about climate futures, with studies showing that nearly 60% of youth globally feel “very” or “extremely” concerned about climate change, and over half believe that “humanity is doomed” if urgent action is not taken (Tang et al., 2025). The widespread psychological distress experienced by young people may hinder the development of human capital, as their educational and professional paths are increasingly influenced by persistent anxiety over global instability. The potential long-term economic implications of this generational eco-anxiety are immense, suggesting that the mental health costs of climate change extend well beyond immediate disaster recovery.

Regional disparities further complicate the picture. While wealthier nations may have the resources to provide mental health support and implement adaptive policies, poorer countries often lack such safety nets. In Sub-Saharan Africa, for instance, prolonged droughts and crop failures have been linked to increased farmer suicides, yet mental health services remain severely underfunded and inaccessible (FAO, 2021). In South Asia, deadly heatwaves disproportionately affect slum dwellers and informal workers who lack access to cooling infrastructure or healthcare, resulting in widespread psychological strain and lost workdays (Ebi & Bowen, 2016). Even in wealthier countries, such as the United States or Australia, climate-related disasters like hurricanes and wildfires have overwhelmed existing mental health systems, illustrating that no country is immune to the dual crisis of climate change and mental health (Heil et al., 2021).

Several theories explain the link between environmental stress and psychological outcomes. The Stress-Diathesis Model posits that environmental stressors, such as climate disasters, interact with individual vulnerabilities to trigger mental illness (Reser & Swim, 2011). The Ecological Systems Theory (Bronfenbrenner, 1979) highlights the role of disrupted social and cultural systems in shaping individual mental health. Meanwhile, the Climate Justice Framework underscores how those least responsible for emissions often bear the heaviest psychological and economic burdens, especially in the Global South (Dasgupta, 2018; Ngo, 2021).

Empirical studies confirm the association between climate change and mental health. Research in the United States after Hurricane Katrina found extremely high rates of PTSD and depression among survivors (Fernandez et al., 2015; Raker et al., 2019; Cianconi, Betrò, & Janiri, 2020). In India, rising temperatures have been linked to increased suicide rates among farmers facing crop failures (Ebi & Bowen, 2016). In Bangladesh, recurrent flooding has been associated with displacement-related trauma (World Bank, 2020). Closer to home, the 2022 KwaZulu-Natal floods in South Africa displaced thousands, destroyed infrastructure worth billions, and left communities grappling with grief and anxiety (South African Government, 2022). These examples reveal not only human suffering but also significant economic losses, reinforcing the importance of this study.

This paper argues that the intersection of climate change, mental health, and economics must be brought to the forefront of academic inquiry and policy design. By unveiling the economic impact of climate change on mental health, it highlights that mental well-being is not merely a private or individual concern but a public good with macroeconomic consequences. The following sections will first explore the pathways through which climate change affects mental health, then examine the economic consequences of these impacts, provide illustrative case studies from around the world, and finally discuss potential solutions and policy pathways. The aim is to demonstrate that protecting mental health in the era of climate change is not only a moral imperative but also an economic necessity for building resilient and sustainable societies.

METHODOLOGY

This study adopts a qualitative-descriptive approach supported by secondary data analysis. A systematic review of peer-reviewed journals, policy briefs, and reports from organisations such as the WHO, FAO, ILO, and IPCC was conducted. Case study analysis was applied to examine specific contexts (Sub-Saharan Africa, South Asia, the United States, and Europe), with emphasis on the KwaZulu-Natal floods. Data sources were triangulated to ensure reliability.

Global North vs Global South Climate Change Vulnerabilities

Although climate change is a global phenomenon, its mental health impacts are distributed unevenly between the Global North and Global South.

- **Global North:** Wealthier nations have stronger infrastructure, more resilient health systems, and greater resources for disaster recovery. However, they are not immune. Events such as the 2003 European heatwave, the 2018 California wildfires, and Hurricane Sandy revealed significant psychological impacts, particularly among vulnerable groups like the elderly, children, and low-income households (Heil et al., 2021). Furthermore, eco-anxiety is highly prevalent in industrialised countries, where heightened media coverage and awareness of climate science can amplify psychological distress.

- **Global South:** Developing countries are disproportionately exposed to climate risks and often lack adequate mental health infrastructure. Sub-Saharan Africa, South Asia, and parts of Latin America face recurrent droughts, floods, and storms, but have limited psychiatric services and weak social safety nets (Opoku et al., 2021). Mental health is frequently underfunded, with stigma preventing access to care. In these contexts, the economic and social consequences of climate-related mental health burdens are especially severe, contributing to poverty traps and reduced development potential.

This disparity illustrates the concept of climate injustice: those least responsible for greenhouse gas emissions often bear the heaviest psychological and economic burdens of climate change. Addressing this imbalance requires both local adaptation measures and global solidarity through funding, knowledge transfer, and equitable climate policies.

Understanding the link between climate change and mental health requires a multi-dimensional analysis. Direct exposure to disasters results in trauma and PTSD; indirect exposure generates eco-anxiety and displacement-related distress; chronic stressors such as heat stress and food insecurity exert long-term pressure on populations. These effects operate through intertwined biological, psychological, and social pathways, leaving no community untouched. However, the severity of impacts is shaped by global inequalities, with the Global South experiencing disproportionately high vulnerability due to weaker health systems and socioeconomic instability. Recognising these links is essential for developing effective adaptation strategies that protect not only ecosystems and economies but also the mental health of current and future generations.

Understanding the Link Between Climate Change and Mental Health

The relationship between climate change and mental health is increasingly recognised as a vital area of study in public health, psychology, and economics. While the physical health impacts of climate variability, such as malnutrition, infectious diseases, and heat-related illnesses, are relatively well-documented, the mental health dimension remains comparatively less visible but no less significant. Climate change can influence mental well-being through a range of pathways: direct exposure to climate disasters, indirect exposure through displacement

and uncertainty, and chronic stressors linked to ongoing environmental change (Clayton et al., 2017; Hayes et al., 2018). These mechanisms interact across biological, psychological, and social levels, producing both immediate and long-term consequences for populations worldwide.

Beyond acute disasters and anticipatory anxieties, climate change also creates chronic stressors that exert sustained pressure on mental health. Among these, heat stress has been widely studied. Rising temperatures not only increase the risk of heatstroke but also contribute to irritability, aggression, and higher suicide rates (Kjellstrom et al., 2009; Adanlawo & Chaka, 2025). Outdoor workers in agriculture and construction are particularly affected, with heat-related fatigue leading to both physical and psychological strain (ILO, 2019). Food insecurity is another chronic stressor. Erratic rainfall and extreme weather disrupt agricultural productivity, undermining food availability and affordability. Food insecurity is closely linked to depression and anxiety, as households face the daily stress of not knowing where their next meal will come from (Ebi & Bowen, 2016). For children, the psychological effects of food insecurity can manifest as developmental delays, poor academic performance, and lifelong mental health challenges.

Finally, environmental degradation, including deforestation, biodiversity loss, and desertification, contributes to a sense of ecological grief. For Indigenous populations and rural communities with strong cultural ties to the land, the loss of environmental resources is not only economic but existential, eroding cultural identity and collective purpose (Cunsolo et al., 2020). This grief represents a profound, long-term form of psychological suffering that is less visible than disaster-related trauma but equally significant.

The ways in which climate change affects mental health can be categorised into biological, psychological, and social pathways:

1. **Biological pathways:** Climate stressors alter neurobiological systems. Prolonged heat, for example, disrupts sleep cycles and neurotransmitter regulation, which in turn exacerbates mood disorders. Similarly, malnutrition due to food insecurity affects brain development and functioning.

2. **Psychological pathways:** Traumatic events and chronic stress trigger maladaptive thought patterns, including hopelessness, catastrophising, and loss of agency. These cognitive responses heighten vulnerability to anxiety and depression (Reser & Swim, 2011).

3. **Social pathways:** Climate change disrupts communities by destroying homes, livelihoods, and cultural institutions. Social isolation, displacement, and loss of community support networks intensify mental health burdens, particularly among marginalised populations (McMichael, 2013).

These pathways do not operate in isolation but interact dynamically. For instance, a farmer experiencing crop failure may suffer biological impacts from malnutrition, psychological impacts from stress, and social impacts from economic displacement, all reinforcing one another.

Direct Exposure to Disasters: Trauma, PTSD, and Psychological Shock

Extreme weather events such as hurricanes, floods, wildfires, and cyclones are intensifying in frequency and severity due to climate change (IPCC, 2022). Survivors of such disasters are at heightened risk of developing post-traumatic stress disorder (PTSD), depression, and anxiety. For instance, studies following Hurricane Katrina in the United States found that nearly half of the affected population reported symptoms consistent with PTSD, and many continued to experience mental health difficulties years later (Fernandez et al., 2015). Similar patterns have been observed after Cyclone Idai in Mozambique and wildfires in Australia, where survivors not only lost homes and livelihoods but also suffered enduring psychological scars (Heil et al., 2021; Xaba et al., 2024).

The trauma associated with direct disaster exposure often stems from multiple stressors: the suddenness of the event, the loss of loved ones, the destruction of property, and the fear of recurrence. Unlike physical injuries, which may heal over time, the psychological wounds can persist and even worsen in the absence of adequate support. Furthermore, repeated exposure, such as living in flood-prone areas where disasters recur, creates a cycle of chronic trauma, eroding resilience and compounding vulnerability (Cunsolo & Ellis, 2018). From a biological perspective, disaster exposure activates the body's stress response systems, including heightened cortisol production and dysregulation of the autonomic nervous system. Prolonged activation of these systems can impair cognitive functioning, emotional regulation, and physical health, creating a feedback loop that links climate-related trauma with both mental and bodily illness (Hayes et al., 2018).

Indirect Exposure to Disasters: Eco-Anxiety, Displacement, and Anticipatory Stress

Not all climate-related psychological distress arises from direct disaster experience. Increasingly, people are experiencing indirect stressors, such as *eco-anxiety*, a chronic worry about the future of the planet. Eco-anxiety has been particularly noted among younger generations who feel powerless to prevent environmental degradation. A landmark global survey found that 59% of young people are "very or extremely worried" about climate change, with 45% reporting that it negatively affects their daily functioning (Tang et al., 2025). Such anticipatory anxiety,

while rational given the scientific evidence of climate risk, can undermine educational outcomes, career planning, and social relationships.

Another major indirect pathway is climate-induced displacement. Rising sea levels, desertification, and prolonged droughts are already forcing millions to migrate within and across borders. The World Bank (2020) projects that by 2050, more than 200 million people could be displaced due to climate impacts. Displacement is strongly associated with cultural bereavement, identity loss, and heightened vulnerability to depression and anxiety (Mncwango & Adanlawo, 2025). Refugees and internally displaced persons often face poor living conditions, disrupted social networks, and limited access to healthcare, compounding their mental health risks. Indirect stressors also include economic insecurity. Farmers losing crops to drought, fishers facing declining stocks, or workers in climate-sensitive industries facing job loss may experience chronic uncertainty and financial strain, both of which are known drivers of mental illness (FAO, 2021). These experiences demonstrate that climate change does not need to be immediately life-threatening to exert damaging psychological effects; the anticipation of harm and disruption can itself be a potent source of stress.

Case Studies: The Effects of Climate Change Across Regions

While the pathways through which climate change impacts mental health are global, their specific manifestations vary by region. Case studies provide powerful insights into how these dynamics unfold in practice, highlighting both common patterns and unique local challenges. This section examines evidence from Sub-Saharan Africa, South Asia, the United States, and Europe, with particular attention to the 2022 floods in KwaZulu-Natal province, South Africa. These cases illustrate the multifaceted ways in which climate stressors disrupt psychological well-being and impose economic costs. Sub-Saharan Africa is among the most vulnerable regions to climate change due to its dependence on rain-fed agriculture, high poverty levels, and weak health systems (FAO, 2021). Climate shocks such as prolonged droughts and floods have been linked to severe mental health challenges, including anxiety, depression, and suicide. In countries like Kenya, Zimbabwe, and South Africa, recurrent droughts have caused crop failures, livestock losses, and food insecurity. These outcomes are associated with psychological distress among farmers, sometimes culminating in suicide (Opoku et al., 2021). The psychological toll of farming uncertainty undermines productivity and disrupts local economies dependent on agriculture.

One of the most striking recent examples is the April 2022 floods in KwaZulu-Natal (KZN), South Africa. Torrential rains triggered landslides and floods that destroyed over 12,000 houses, displaced tens of thousands, and claimed more than 430 lives (South African Government, 2022). Beyond the physical destruction, survivors reported widespread trauma, anxiety, and grief, as many lost family members and livelihoods. The floods also exposed the fragility of mental health infrastructure in South Africa. With limited access to counselling services, communities relied heavily on overstretched NGOs and social workers. Many survivors exhibited symptoms of PTSD, particularly children and elderly people who witnessed traumatic scenes (SABC News, 2022). Economically, the KZN floods caused an estimated R17 billion in damages (approximately USD 1 billion), disrupting the Durban port, a critical trade hub for Southern Africa (Dube, Nhamo, & Chikodzi, 2021). These disruptions had cascading economic impacts across the region, including higher costs for imported goods, delays in exports, and job losses in affected industries. When combined with the mental health toll, the floods highlight how climate disasters create a dual burden: direct economic costs of infrastructure damage and indirect costs from psychological suffering and lost productivity.

South Asia is another hotspot of climate vulnerability. Countries such as India, Pakistan, and Bangladesh experience extreme heatwaves, erratic monsoons, and recurrent flooding. These events exacerbate both physical and psychological health challenges, with significant economic consequences. Likewise, India has experienced increasingly severe heatwaves, with temperatures exceeding 50°C in some regions. Studies have linked rising temperatures to higher suicide rates among farmers, who face crop failures, debt, and despair (Ebi & Bowen, 2016). These suicides represent not only human tragedy but also economic loss, as farming households lose labour capacity and communities lose experienced agricultural workers. Bangladesh, one of the world's most flood-prone countries, faces frequent displacement of millions. Survivors often experience PTSD, depression, and anxiety due to repeated losses of homes and livelihoods (Chaka & Adanlawo, 2024). Economic consequences include reduced productivity in farming and fishing, reliance on aid, and increased healthcare costs. Furthermore, migration from flood-prone rural areas to urban slums contributes to overcrowding, unemployment, and further psychological strain.

The United States, despite its wealth and advanced infrastructure, is highly vulnerable to climate-related disasters. Events such as hurricanes and wildfires have caused significant psychological and economic consequences. Hurricane Katrina displaced over one million people and caused more than USD 125 billion in damages. Survivors reported some of the highest rates of PTSD ever recorded in a disaster context, with nearly half of affected individuals showing symptoms (Fernandez et al., 2015). Many also faced depressions linked to job loss, poverty, and disrupted social networks. Economically, the mental health toll contributed to prolonged

recovery, as trauma limited the ability of many survivors to return to work or rebuild businesses. The increasing intensity of wildfires in California has also been linked to widespread anxiety and depression. Communities affected by the 2018 Camp Fire reported persistent trauma years after the event, with children particularly vulnerable (Heil et al., 2021). Beyond health costs, wildfires reduce labour productivity, disrupt schooling, and weaken tourism revenues, demonstrating the long-term economic effects of climate-related mental health crises.

Europe also faces a combination of acute climate disasters and chronic stressors. The 2003 heatwave, which caused over 70,000 deaths across the continent, highlighted the vulnerability of elderly populations to extreme temperatures (McMichael, 2013). Survivors not only experienced physical illness but also significant psychological distress, as communities grappled with widespread mortality. In 2021, severe floods in Germany killed over 180 people and displaced thousands. Survivors reported trauma, depression, and stress associated with losing homes and livelihoods (Tang et al., 2025). Economically, damages exceeded €30 billion, and the recovery process has been prolonged by the psychological toll on affected populations. In addition to acute events, Europeans report some of the highest levels of eco-anxiety globally. Young people, in particular, express deep concern about climate futures, which influences career choices, fertility decisions, and social behaviour (Clayton et al., 2017). While harder to quantify, eco-anxiety has economic implications by shaping long-term demographic and labour market trends.

Comparative Insights

Across these regions, several common themes emerge:

1. Disasters create both immediate trauma and long-term mental health burdens, which reduce productivity and increase healthcare costs.
2. Vulnerable populations: farmers in Africa and India, urban poor in Bangladesh, low-income households in the US, and elderly people in Europe bear disproportionate psychological and economic burdens.
3. Economic impacts are both direct and indirect: infrastructure damage is compounded by reduced labour capacity due to mental health challenges.
4. Global inequities persist; while wealthier nations face eco-anxiety and disaster-related trauma, poorer regions experience compounded burdens due to weaker healthcare systems and higher exposure to climate risks.

These case studies demonstrate that climate change is not only an environmental crisis but also a mental health and economic crisis. The 2022 floods in KwaZulu-Natal illustrate the dual burdens of physical destruction and psychological suffering, while examples from South Asia, the United States, and Europe show that no region is immune. However, disparities in vulnerability highlight the injustice of climate change: those least responsible for emissions often face the greatest mental health and economic consequences. Understanding these regional dynamics is crucial for designing equitable adaptation policies that protect both mental well-being and economic stability.

Economic Consequences of Climate-Induced Mental Health Challenges

Climate change affects mental health not only as a public health issue but also as an economic challenge. Mental health problems linked to climate change generate substantial costs at individual, community, and national levels. These costs take multiple forms, ranging from reduced labour productivity to increased healthcare expenditure and pressure on social welfare systems. At a macro level, climate-induced mental health burdens can destabilise economies by reducing GDP growth, undermining development gains, and exacerbating inequality (Dasgupta, 2018; Shezi et al., 2025).

This section examines the economic consequences of climate-related mental health challenges in detail, focusing on four dimensions: loss of productivity, rising healthcare costs, strain on social safety nets, and macroeconomic instability. Special attention is given to gendered and youth dimensions, which highlight how vulnerable groups disproportionately bear the costs.

1. Loss of Productivity

Mental health challenges such as depression, anxiety, PTSD, and chronic stress impair people's ability to work effectively. Workers experiencing psychological distress may be unable to concentrate, make decisions, or sustain consistent levels of productivity. This phenomenon manifests in two ways:

- a. Absenteeism – when employees miss workdays due to poor mental health.
- b. Presenteeism – when employees are physically present at work but unable to perform at full capacity.

Globally, depression and anxiety are estimated to cost the economy over US\$1 trillion annually in lost productivity (WHO, 2022). Climate change intensifies these losses by creating additional stressors. For example, farmers facing repeated crop failures due to drought may suffer from climate-related grief, reducing their ability to make rational agricultural decisions (Cunsolo et al., 2020). Similarly, heat stress reduces productivity in outdoor labour-intensive sectors such as agriculture, mining, and construction (ILO, 2019). In low-income economies where livelihoods depend heavily on climate-sensitive activities, the productivity costs of climate-related mental

health problems are particularly high. In India, for instance, rising temperatures have been linked not only to decreased agricultural yields but also to rising suicide rates among farmers, representing both human tragedy and economic loss (Ebi & Bowen, 2016). In South Africa, mining and construction workers face productivity losses from heat-related fatigue and psychological strain, which reverberates across the national economy (Tang et al., 2025).

2. Rising Healthcare Costs

The treatment of mental health conditions generates significant economic costs. Climate-related disasters often increase the demand for psychiatric care, trauma counselling, and hospitalisation. For example, after Hurricane Katrina, the US government allocated billions of dollars for mental health services in affected states, yet many survivors still reported unmet needs years later (Fernandez et al., 2015). In developing countries, where mental health services are underfunded and underdeveloped, the rising burden of climate-related psychological disorders creates additional fiscal strain. Public health systems already stretched by infectious diseases and maternal health challenges must now allocate scarce resources to mental health, often without trained professionals or adequate facilities (Patel et al., 2018).

The economic burden of untreated mental health conditions is particularly severe. Without early intervention, individuals may develop chronic conditions requiring long-term treatment, further increasing costs. Moreover, untreated mental health problems exacerbate physical illnesses, creating a syndemic effect that multiplies healthcare costs (Hayes et al., 2018). For instance, stress and depression are associated with cardiovascular disease and weakened immune systems, making populations more vulnerable to other health challenges linked to climate change, such as vector-borne diseases.

3. Strain on Social Safety Nets

Climate change exacerbates unemployment and poverty, both of which are major risk factors for poor mental health. Communities facing disaster-related displacement or agricultural collapse often become reliant on government welfare programs or international aid. This dependence places additional strain on social safety nets, especially in low- and middle-income countries where financial resources are already limited. For example, prolonged drought in East Africa has led to mass displacement and reliance on food aid, while simultaneously increasing psychological distress among affected populations (FAO, 2021). In Mozambique, survivors of Cyclone Idai required long-term housing, food support, and healthcare, including mental health services, placing immense pressure on state resources and international donors (Shezi et al., 2025).

In wealthier countries, social insurance systems also face rising costs. In the United States, for example, disability claims linked to mental illness increased significantly after climate disasters such as Hurricane Sandy, reflecting both individual hardship and systemic fiscal strain. Social costs extend beyond financial expenditures. Climate-induced psychological stress undermines community cohesion, weakening informal social support networks. This erosion of community resilience increases dependence on formal welfare systems, compounding the economic burden (McMichael, 2013).

4. Macroeconomic Instability

At a national and global scale, climate-related mental health burdens contribute to macroeconomic instability. This occurs through three main mechanisms:

- a. **Reduced labour supply** – As individuals withdraw from the workforce due to mental illness, the pool of available labour shrinks, reducing potential GDP growth.
- b. **Increased public expenditure** – Governments must allocate more funds to healthcare, social welfare, and disaster recovery, crowding out investments in infrastructure, education, and innovation.
- c. **Decline in productivity and competitiveness** – Economies with high levels of climate-related mental illness may struggle to compete globally, particularly in labour-intensive industries.

The cumulative effect is slower economic growth, widening inequality, and reduced resilience to future shocks (Watts et al., 2021). For example, small island states in the Pacific face existential threats from sea-level rise. Displacement, loss of cultural identity, and associated mental health burdens not only undermine well-being but also weaken economic stability, reducing the capacity to attract investment and sustain development (World Bank, 2020).

5. Gendered dimensions

The economic consequences of climate-induced mental health problems are not evenly distributed across society. Women, in particular, face disproportionate burdens due to gendered roles and responsibilities. In many parts of the Global South, women are primary caregivers and food providers. When climate shocks disrupt water supply or food security, women bear the dual stress of resource scarcity and caregiving responsibilities, increasing

their vulnerability to depression and anxiety (United Nations Environment Programme [UNEP], 2019). Furthermore, women often have less access to formal employment, healthcare, and financial resources, making it harder to cope with the economic impacts of climate-related psychological distress. Gender-based violence, which often increases during and after disasters, adds another layer of psychological harm with economic implications (Patel et al., 2018).

6. Youth and Future Generations

Young people represent another group disproportionately affected by the economic consequences of climate-related mental health burdens. Eco-anxiety, uncertainty about the future, and disruption of education due to disasters can undermine human capital formation, reducing future productivity and economic growth. In the long term, this may result in a less resilient workforce, with negative implications for national competitiveness (Clayton et al., 2017). In Africa, where youth make up more than 60% of the population, the economic consequences of climate-induced psychological stress could be particularly severe. Unemployment, combined with climate anxiety and political instability, may fuel cycles of poverty and unrest, weakening long-term development prospects (Opoku et al., 2021).

The Vicious Cycle of Poverty, Mental Health, and Climate Change

Climate change, mental health, and economic outcomes are interconnected in a vicious cycle. Poor populations are more vulnerable to climate shocks due to weaker housing, limited access to healthcare, and dependence on climate-sensitive livelihoods. When disasters occur, these populations experience heightened psychological distress, reducing productivity and increasing reliance on social welfare. The resulting economic strain further entrenches poverty, which in turn increases vulnerability to future climate shocks (McMichael, 2013).

Breaking this cycle requires integrated interventions that address climate resilience, mental health, and economic development simultaneously. Failure to do so risks trapping millions in cycles of poverty and psychological suffering, with profound implications for global stability and prosperity. The economic consequences of climate-induced mental health challenges are multifaceted and far-reaching. From lost productivity and rising healthcare costs to strained social safety nets and macroeconomic instability, the economic toll underscores that climate change is not only an environmental crisis but also a profound economic and social challenge. Vulnerable groups, particularly women and youth in the Global South, bear disproportionate burdens, highlighting the injustice of climate impacts. Recognising these economic consequences is essential for policymakers, as investment in mental health resilience can yield significant economic returns by safeguarding productivity, reducing healthcare costs, and strengthening social cohesion.

DISCUSSION

The intersection of climate change, mental health, and economics highlights an urgent need for integrated strategies that address all three dimensions simultaneously. As the case studies illustrate, climate disasters and chronic environmental changes impose dual burdens: psychological distress and economic disruption. Without intervention, these burdens risk entrenching poverty, weakening resilience, and slowing sustainable development. Effective solutions require multilevel action, from international governance to local community initiatives, combining health, climate, and economic policies.

This section explores five major pathways for addressing the crisis: strengthening mental health systems, advancing climate adaptation policies, implementing workplace and private sector strategies, mobilising community-based interventions, and enhancing global governance and financing mechanisms.

1. Strengthening Mental Health Systems

One of the most direct solutions is the expansion and strengthening of mental health services to prepare for and respond to climate-induced psychological distress. Currently, mental health remains severely underfunded: globally, less than 2% of government health budgets is allocated to mental health (WHO, 2022). In many developing countries, the ratio of psychiatrists per 100,000 people is fewer than 0.5, compared to over 10 in high-income countries (Patel et al., 2018).

Key strategies include:

- Integration into primary healthcare: Embedding mental health services within primary care allows early detection and intervention, particularly in rural and climate-vulnerable areas.
- Task-shifting approaches: Training community health workers and nurses to provide basic psychological support can overcome the shortage of specialists (Tang et al., 2025).
- Disaster-response mental health units: Establishing rapid-response teams to provide counselling and trauma support immediately after floods, wildfires, or cyclones reduces long-term PTSD prevalence.
- Digital interventions: Mobile health apps and telepsychiatry can extend access to services, especially in areas where infrastructure is disrupted by climate disasters.

Strengthening mental health systems not only improves well-being but also reduces long-term economic costs by sustaining productivity and preventing chronic illness.

2. *Climate Adaptation Policies*

Reducing exposure to climate risks is central to preventing mental health crises. Adaptation policies that build resilience against floods, droughts, heatwaves, and other climate impacts indirectly safeguard psychological well-being and economic stability.

Examples of effective adaptation measures include:

- **Resilient infrastructure:** Building flood-resistant housing, seawalls, and improved drainage systems reduces the likelihood of displacement and associated trauma.
- **Urban cooling strategies:** Expanding green spaces, investing in cooling centres, and promoting heat-resilient urban planning reduce heat stress and its psychological impacts (ILO, 2019).
- **Climate-smart agriculture:** Promoting drought-resistant crops, irrigation technologies, and crop insurance protects farmers from crop failure and reduces psychological distress (FAO, 2021).
- **Early warning systems:** Disseminating timely information on floods, storms, or heatwaves reduces uncertainty and gives communities a greater sense of control, mitigating anxiety.

Importantly, adaptation policies must be inclusive, addressing the specific needs of women, youth, Indigenous peoples, and other vulnerable groups. By reducing both physical and psychological risks, adaptation strengthens resilience and reduces long-term costs to health systems and welfare programs.

3. *Workplace and Private Sector Strategies*

Employers and the private sector play a crucial role in mitigating the economic impacts of climate-related mental health challenges. Workplaces are both sites of exposure (e.g., outdoor labourers facing heat stress) and potential sources of support.

Strategies for workplaces include:

- **Employee wellness programs:** Offering counselling, stress management workshops, and flexible working arrangements can mitigate presenteeism and absenteeism.
- **Heat-adaptation measures:** Providing shaded rest areas, adjusted work hours during heatwaves, and hydration support reduces both physical and mental stress (Kjellstrom et al., 2009).
- **Insurance and financial security schemes:** Crop insurance, unemployment protection, and mental health coverage protect workers and farmers from economic distress that fuels psychological suffering.
- **Corporate responsibility initiatives:** Businesses can invest in climate-resilient supply chains and community programs, recognising that a healthier workforce is also more productive and profitable.

The private sector's engagement is essential not only for humanitarian reasons but also for sustaining competitiveness in an increasingly climate-disrupted world.

4. *Community-Based and Grassroots Interventions*

Local communities are often the first responders to climate disasters and the primary providers of informal social support. Community-based interventions can provide culturally sensitive and accessible solutions that address both mental health and economic needs.

Examples include:

- **Peer-support groups:** Survivors of floods or droughts sharing experiences can reduce stigma and foster collective resilience (McMichael, 2013).
- **Traditional and Indigenous practices:** Many communities have long-standing practices of environmental stewardship and healing that can be mobilised for resilience-building (Cunsolo & Ellis, 2018).
- **School-based programs:** Educating children about climate adaptation and providing psychological support in schools strengthens resilience in younger generations.
- **Community preparedness drills:** Training communities in disaster preparedness not only reduces material losses but also enhances psychological readiness, reducing trauma.

Community-led initiatives also empower vulnerable populations, shifting them from passive victims to active agents of resilience. This empowerment has both mental health and economic benefits, fostering stronger social cohesion and local development.

5. *Global Governance and Financing*

Climate change and mental health are transnational challenges that require coordinated global action. International organisations, development banks, and climate funds play a pivotal role in mobilising resources, sharing knowledge, and ensuring equity.

Global policy priorities include:

- **Mainstreaming mental health into climate agreements:** Frameworks such as the Paris Agreement should explicitly recognise mental health as a dimension of adaptation.
- **Climate finance for health systems:** Funds like the Green Climate Fund should allocate resources for strengthening mental health services in climate-vulnerable regions.

- Global monitoring and research: Institutions such as WHO and IPCC should continue expanding research on the climate–mental health–economy nexus to inform evidence-based policies.
- Cross-sectoral partnerships: Collaboration between health ministries, environmental agencies, and financial institutions ensures integrated approaches to resilience.

Equitable financing is particularly important to address climate injustice, ensuring that low- and middle-income countries most affected by climate change receive adequate resources to strengthen resilience.

CONCLUSION

Climate change has traditionally been framed as an environmental and physical health crisis, but growing evidence demonstrates that its reach extends deeply into the psychological and economic domains. As this paper has shown, climate change affects mental health through multiple pathways: direct exposure to disasters, which causes trauma and PTSD; indirect stressors, such as eco-anxiety, displacement, and uncertainty; and chronic stressors, including heat stress, food insecurity, and environmental degradation. These effects operate through interconnected biological, psychological, and social mechanisms, leaving lasting impacts on individuals and communities alike (Raker et al., 2019; Cianconi, Betrò, & Janiri, 2020; Pihkala, 2020; Muluneh, 2021).

The economic consequences of these mental health challenges are profound. Reduced productivity, rising healthcare costs, strain on social safety nets, and long-term macroeconomic instability reveal that mental health is not just a private issue but a public economic concern. Vulnerable groups, including women, youth, and communities in the Global South, bear a disproportionate share of these burdens. The 2022 floods in KwaZulu-Natal, the farmer suicides in India, the displacement crises in Bangladesh, and the wildfires in California collectively highlight how climate disasters and chronic stressors impose dual costs: the immediate destruction of assets and the invisible, yet equally damaging, erosion of mental well-being.

Addressing the economic and mental health impacts of climate change requires a holistic strategy that integrates health, climate adaptation, economic policy, and social support. Strengthening mental health systems, implementing adaptation policies, engaging workplaces, mobilising communities, and enhancing global governance represent complementary pathways to resilience. While these interventions require substantial upfront investment, the long-term economic benefits—through sustained productivity, reduced healthcare costs, and greater social cohesion are immense. In short, protecting mental health in the era of climate change is not a luxury but a necessity for sustainable development.

The global disparities highlighted in this paper underscore the principle of climate justice. Those least responsible for greenhouse gas emissions, farmers in Sub-Saharan Africa, slum dwellers in South Asia, and Indigenous communities worldwide, are often those who suffer the greatest psychological and economic impacts. Equity must therefore guide global climate financing and adaptation efforts, ensuring that vulnerable populations have the resources to build resilience. Ultimately, safeguarding mental health in the era of climate change is both a moral imperative and an economic necessity. Protecting ecosystems and infrastructures will not be enough if human minds remain unprotected. By integrating mental health into the climate agenda, societies can build the resilience needed to weather not only the storms of today but also the uncertainties of tomorrow.

This study contributes to the literature by expanding the discourse on climate change beyond physical impacts to include psychological and economic dimensions. Also, by providing evidence from both developed and developing regions, highlighting global inequalities in vulnerability, this paper offers a conceptual framework linking climate drivers, mental health outcomes, and economic consequences. It also suggests integrated policy solutions that combine resilience, mental health systems strengthening, and economic planning.

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