

Draft Working Paper

Displacement and Disconnection: Reframing Climate-Induced Mobility Through a Mental Health and Transnational Lens

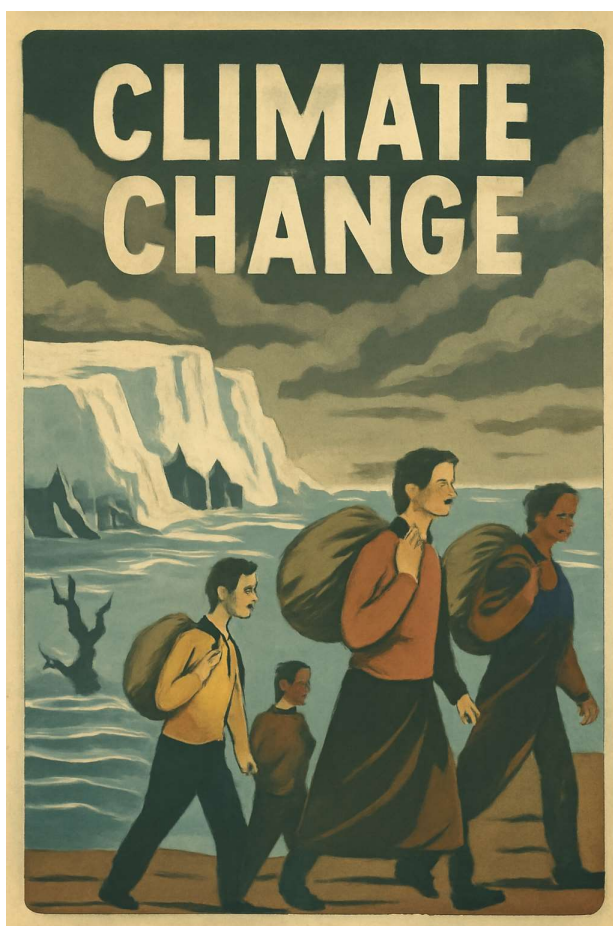
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Executive Summary

This working paper provides a nuanced and comprehensive examination of the intersection between climate change, human mobility, and mental health (hereafter referred to as the nexus) through a distinctly transnational perspective. In exploring the lived realities of displacement, the study foregrounds the psychosocial dimensions that shape and complicate the mobility experiences of individuals and families affected by climate-related events. Recent decades have seen a sharp rise in climate-induced mobility, encompassing forced displacements, planned relocation programs, and instances of immobility, where people are “trapped” in vulnerable environments. These patterns unfold within a global context marked by chronic crisis and structural instability—what scholars term “polycrisis,” wherein overlapping political, economic, environmental, and health crises produce complex, cascading vulnerabilities.

By employing document synthesis, the assessment uncovers how affected populations, often situated within transnational family networks, navigate profound emotional distress. Displacement entails ruptures not only of physical space but also of identity, social roles, and care arrangements. The resulting disconnection fuels psychological strain characterized by grief, anxiety, and a sense of loss that transcends immediate environmental damage. Special focus on children and adolescents within these transnational families, who face heightened psychosocial risks due to separation, interrupted caregiving, and exposure to unstable environments, is pertinent. Their developmental vulnerabilities require tailored mental health support that remains largely under-addressed in prevailing policy and service frameworks.

Most methodological paradigms within climate-migration-health scholarship are insufficient in capturing the relational and systemic nature of these challenges. So we situate displacement and mental health within broader inequities of access to care, social belonging, and political agency, and argue for a reframing that acknowledges these intersecting inequalities. The synthesis based on the arguments calls for adaptable, context-specific interventions. One recommendation is the adoption of multi-level, people-centred approaches that foreground psychosocial well-being in integration and resettlement policies. The need to engage both displaced populations and host communities, particularly in contexts where stigmatization and exclusion exacerbate mental health burdens, is pertinent. Innovative solutions are proposed to bridge gaps in connectivity and care. For example, the use of AI-powered storytelling platforms offers promise in restoring agency, fostering empathy, and enhancing psychological resilience by enabling displaced individuals to share narratives and rebuild disrupted social ties. It is also iterated that the key to integrating mental health within the discourse on climate-induced mobility, as it has traditionally emphasized physical and economic markers alone. The transnational lens that appreciates the fluid social networks, identities, and emotional landscapes shaping displacement experiences can help provide actionable pathways for policymakers, practitioners, and researchers to embed mental health and social cohesion centrally within forthcoming climate resilience strategies—ensuring that adaptation efforts nurture not only landscapes but also the people and families whose futures hinge upon them.

Point 1: The interactions referred to in this assessment demonstrate the interlinkages, highlighting the need for integrative, cross-sectoral approaches that address climate change's multifaceted health and social dimensions and reflect how a transnational lens on mental health impacts and practical pathways for policy and practice can be informed by lived experience and justice-oriented principles, and AI-supported storytelling is used as a tool.

Point 2: The focus on displacement and psychosocial strain provides critical empirical and conceptual insights that align closely with our COST ACTION mandate to systematically map climate-related mental health risks and develop processes to explain the complex climate change and mental health nexus. Noting the transnational nature of mobility, and the nuanced psycho-social challenges faced by displaced families—including children and adolescents—across diverse geopolitical contexts, the assessment reflects on the intersectionality and underlines the importance of understanding how climate hazards amplify vulnerabilities unevenly across populations.

Point 3: How adaptive strategies and health system support possibilities could be integrated while designing and developing support measures, and the need for culturally and contextually appropriate mental health and psychosocial support for displaced populations, while identifying and prioritizing effective coping mechanisms and healthcare interventions that foreground the importance of addressing emotional dislocation, family separation, and systemic barriers to care.

Point 4 : What are the key considerations for translating CliMent's strategic objectives into tailored policy and programmatic responses and an inclusive approach wherein community-engaged psychosocial interventions—including innovative tools such as AI-driven storytelling—could be a pathway to co-create and disseminate fast-acting, scalable interventions that can be readily adopted in affected communities.

Point 5: Could an AI-based pathway help outline a participatory approach that amplifies WG4's focus on mobilizing knowledge exchange and social innovation for psychosocial relief alongside climate adaptation and resilience-building efforts? And can we address structural inequities and embed mental health within durable governance frameworks, aligning with CliMent's strategic outlook to anchor lasting systemic change?

Figure 1: Five key points reflecting on the integration of knowledge, agendas, agency and policies with the scope of AI-based tools and innovation ecosystems

Okamoto et al (2025).) reflect how climate-induced mobility is increasingly being reframed from purely environmental or economic lenses to one that also foregrounds mental health and transnational relations. Displacement and migration triggered by extreme weather events, rising sea levels, or slow-onset ecological degradation often sever individuals' ties to place, culture, and community — leading to profound psychological impacts. For example, a recent policy brief from the United Nations University highlights how forced mobility due to climate events can lead to loss of belonging, reduced autonomy, isolation, and elevated risks of anxiety and depression.

This working paper advances an AI-based integrative approach to address climate-driven mental health challenges across the continuum—from risk assessment to intervention design and deployment. It aligns with the COST Action's goal of embedding mental health considerations within climate resilience strategies, education, and social infrastructure development.

To mainstream mental health within the climate mobility discourse, shaping actionable and equity-centred pathways toward a climate-resilient future is key. Simpson et al. (2024) emphasize that frameworks for addressing climate-induced mobility must evolve beyond traditional migration categories such as *voluntary* and *forced*. Climate-related displacement involves more than physical relocation—it represents a profound process of displacement and disconnection, in which individuals and communities lose not only their homes but also their cultural anchors, social networks, and sense

of belonging. Reframing climate mobility through a mental health and transnational lens allows for a more holistic understanding of its human dimensions. This perspective highlights the need for integrated psychosocial support, culturally sensitive care, and the strengthening of transnational community networks that sustain identity and continuity across borders. Wewerinke-Singh and Antoniadis (2022) explain how, from a transnational lens, those who move — or are compelled to move — carry and reconstruct social, cultural, and ecological connections across borders or within diasporas. The displacement process thus involves both departure and attempted reintegration or adaptation in new contexts, shaped by ties across origin and destination. Mental health outcomes are influenced not only by trauma or loss but by the rupture of social networks, culture, identity, and the environment that once anchored individuals — a phenomenon described as “disconnection”.

Overall, the emerging scholarship converges on the recognition that psychological health is as influenced by urban design as it is by clinical or social interventions. AI-powered tools—when transparently and equitably implemented—can support planning approaches that can help map and optimize green and blue spaces for stress relief and social connection; second scenario building option with AI can help tailor environmental factors (sound, light, air, zoning) to occupant needs, both in cities and workplaces; the technology can also help facilitate rapid feedback loops, making cities and communities to more responsive to well-being metrics and thereby empower residents as co-producers of data and stewards of their environment; and in addition we can conclude scaffolding urban interventions with artistic, biophilic, and community-facing elements can help nurture resilience and belonging. A major caveat, however, is the risk of algorithmic bias or digital exclusion, meaning that new AI-driven strategies must build in inclusive principles and community voices from the outset. When done well, the fusion of AI, urban design, and mental health points to a future where cities and offices actively contribute to collective flourishing.

Section 2: Transnational Families, Climate Displacement, and AI-Enabled Healing: Pathways to Mental Wellbeing

In the context of AI and digital innovation tools and mental health initiatives, transnational families displaced due to climate change represent a uniquely vulnerable yet resilient population who can significantly benefit from innovative technological interventions. Drawing from emerging evidence on digital platforms' role in empowerment-focused discourse and AI's emerging role for health support systems. Climate-induced displacement fragments families across borders, creating what researchers term "asymmetrical reciprocity" in transnational family structures. Children separated from parents, elderly caregivers managing grandchildren while adult children migrate for work, and families scattered across continents all experience profound disconnection. This geographical dispersion is compounded by psychological trauma—loss of place, cultural dislocation, and the chronic stress of environmental precarity.

AI-generated visuals are increasingly leveraged in global sustainability and social-ecological research to represent the ways in which various dimensions of human-nature interaction both intersect and interact. These visuals can take forms such as:

- Layered Networks Visualization: Mapping feedback loops between social behaviors, environmental pressures, and health impacts, revealing how changes in one domain propagate through systems and affect others.
- Intersectional Diagrams: Illustrating overlapping spheres—such as individual ecological distress, collective action, and place-based emotional connections—to show shared vulnerabilities and intervention points.

- Digital Metaphors: Showcasing how design, digital platforms, and citizen participation intertwine to enable or constrain adaptive/mitigative responses in cities.
- Temporal Maps: Visualizing trajectories of nature loss or restoration and their correlation with collective mood, public attitudes, or migration patterns over time.

These systematic visuals or narratives help to move beyond simplistic aspects about climate risk or environmental depression and to instead promote holistic, justice-oriented approaches that foreground complexity, intersectionality, and the dynamic nature of socio-ecological systems. By making invisible interdependencies and feedbacks visible, they empower diverse stakeholders—including policymakers, educators, and local communities—to co-create knowledge, identify leverage points, and engage in more nuanced dialogues and activism

AI-driven storytelling platforms offer transformative potential for these families by creating virtual bridges for narrative healing. Unlike static communication tools, AI can facilitate dynamic, culturally responsive storytelling experiences that help family members process trauma, maintain cultural identity, and strengthen intergenerational bonds.

For example, AI platforms can:

- Enable multilingual story sharing with real-time translation, allowing grandparents to pass down traditional knowledge to grandchildren across language barriers
- Create personalized therapeutic narratives that help children process separation anxiety and displacement trauma through culturally relevant storytelling
- Generate interactive family histories that preserve cultural memory and provide identity anchors for displaced youth

We will also explain how ‘Urban green spaces’ augmented with AI can specifically serve transnational families by providing culturally adaptive healing environments. AI sensors can detect stress patterns in frequently used community spaces and adjust environmental factors—such as soundscapes featuring traditional music, lighting that mimics home country seasonal patterns, or plant selections that evoke familiar landscapes—to create therapeutic "pocket homelands" within host cities.

The economic empowerment dimension is crucial, as digital platforms can connect displaced family members with livelihood opportunities while AI-curated green spaces provide mental health support that enhances their capacity to engage in economic recovery. Community gardens managed through AI systems can offer both therapeutic engagement and practical skills development, while AI-powered social networks help families access culturally appropriate mental health resources and community support systems. For displaced children, particularly vulnerable to digital exclusion, AI-enhanced storytelling in community green spaces can provide accessible mental health interventions that don't require device ownership or high digital literacy, democratizing access to healing tools regardless of socioeconomic status. The point being, when implemented with attention to equity and cultural sensitivity, AI-enabled interventions can transform urban spaces into healing environments that recognize and address the complex, intergenerational trauma patterns characteristic of climate-displaced transnational families, offering pathways to restoration, connection, and resilience.

Section 3: AI-Based Story Telling for Explaining and Addressing Complex and Challenging Matters

AI-based storytelling has emerged as a transformative tool to interpret, communicate, and address multifaceted global issues such as climate change, social inequality, and public health crises. Through advanced natural language processing and generative models like GPT architectures, AI can synthesize vast datasets, policy documents, and local narratives into coherent, human-centered stories that make complexity intelligible. Research indicates that AI storytelling systems can generate structured and emotionally engaging narratives that enhance public understanding of scientific or policy-driven subjects when combined with human contextual oversight (Price, 2024). In the context of emerging narratives about technology and societal transformation, integrating inclusive and accountable storytelling can help fill information and knowledge gaps based on lived experiences, ethical dilemmas, and local knowledge in data-centric discourses. We need to see that a participatory approach ensures that AI does not merely automate narrative construction but co-creates meaning in collaboration with citizens, fostering empathy, legitimacy, and informed action. Also, the challenge lies in ensuring narrative authenticity and socio-cultural sensitivity. Studies emphasize that combining AI-generated insights with human interpretive judgment can amplify moral imagination and collective learning, turning storytelling into a mode of sense-making rather than simplification.

Conceptual Framework: AI-Enabled Narrative (Story) Creation with Five Key Points

- ✓ Generative Narrative Engine: Employs transformer-based models to simulate alternatives and articulate human experiences.
- ✓ Ethical Mediation Interface: Applies algorithms for bias detection, transparency, and narrative accountability.
- ✓ Participatory Co-Creation: Involves stakeholders, community voices, and experts in iterative storytelling cycles.
- ✓ Reflexive Feedback Loop: Measures cognitive, emotional, and behavioral effects, refining narrative outputs over time.
- ✓ Position AI storytelling as a narrative mediation system — one that bridges data analysis and human experience, converts complexity into empathetic understanding, and supports deliberation around morally and politically sensitive challenges in contemporary society.

Understanding direct and indirect drivers of the climate-migration nexus



All AI Visuals Source: Nidhi Nagabhatla

Story 1: Explaining the climate and migration nexus and its mental health impacts on transnational families to secondary school students [story adapted for secondary school students in Europe]:

Today we're going to talk about a very important topic: how climate change, migration, and mental health are connected, especially for families in France and across Europe.

First, let me explain some basic ideas. You probably know that climate change means our planet is getting warmer, which causes many problems like floods, droughts, storms, and rising sea levels. These changes affect places where people live and work—think about farms drying up or homes flooding. Now, when these problems happen, people sometimes have to move away from their homes to find safer places. This movement is called migration. There are two types of drivers (reasons) for migration linked to climate:

Direct drivers (reasons): These are immediate climate problems like floods or hurricanes that destroy homes and force people to leave quickly.

Indirect drivers (reasons): These come later, like when crops fail for many years, causing loss of income, or situations where they can't grow food, which pushes families to move.

Imagine a farmer in a village where the soil no longer supports crops because of drought or no rain. Their family might have to decide to move to a city to find work. Sometimes, young people migrate first while others stay behind to take care of things—this can split families for long times.

This leads to a challenge most don't see—mental health. When families move across countries or even within the same country, members often feel stress from leaving their home, losing community, or facing discrimination in new places. They worry about jobs, education, and the future. Children and teenagers, especially, may feel anxious or depressed. This is called psychosocial stress. For families living in two or more countries—called transnational families—these stresses multiply. Parents may be far from children, or family members might struggle to keep connections. Mental health support is often limited or hard to access for migrants.

Climate change means our planet is getting warmer, causing floods, heatwaves, storms, and droughts. In France, you might have heard about heatwaves affecting cities or floods damaging towns. These environmental changes can make life difficult for many people, especially those who depend on farming or natural resources.

When these challenges are severe, people may have to move from their homes to safer places. This movement is called migration. Sometimes it happens because a flood or storm destroys homes directly—that's a direct driver. Other times, it happens slowly over years when farms dry up, or there aren't enough jobs, which are indirect drivers.

For example, families from Mediterranean regions or overseas territories may move to cities like Paris or Lyon seeking better opportunities if their local environment becomes too difficult to live in. This creates new challenges for both the families who move and the communities that welcome them.

One thing many people don't realize is how much migration affects mental health. Moving away from your home, friends, and familiar places can cause stress, anxiety, or sadness. Young people, especially teenagers, might feel confused or isolated when they settle in new schools or neighborhoods. This is even harder when family members live apart or when people face discrimination.

Box 2 : "Climate Mobility at the Crossroads: Advancing Just Transition Principles through the Global Compact for Migration"

This pretext to the story reflect the intersection of climate-induced mobility challenges, the transformative agenda of just transition, and how a global agreement provides a practical international policy framework to address these issues coherently and humanely. It captures the urgency and opportunity embedded in integrating mobility, resilience, and equity under global commitments, emphasizing the role of the GCM as a facilitator of inclusive, safe, and rights-based climate mobility governance.

The Global Compact for Migration (GCM) explicitly recognizes the need for humane, orderly, and safe migration and stresses that climate mobility should be addressed through coherent, rights-based, and development-oriented approaches. It highlights the importance of integrating environmental factors as drivers of migration while emphasizing protection and support for displaced persons. The Compact encourages international cooperation, policy harmonization among sending, transit, and receiving countries, and the adoption of inclusive measures that uphold migrants' dignity and human rights (McAdam, 2018).

The just transition approach —prioritizes social inclusion, culturally sensitive mental health support, participatory decision-making, green job creation, and regional cooperation—concretely operationalizes some of the GCM principles. By focusing on equitable economic opportunities, empowerment through participation, and transnational policy frameworks, it embodies the Compact’s goals of ensuring safe, regular, and rights-respecting migration pathways, especially in the context of climate-induced displacement (IOM, 2023)



An AI-generated visual by the authors to reflect on GCM and Just Transition within the given context, and the related story in the following section reflects on some of the context noted in this box

Story 2 : The case for Climate Mobility in The Promise of Just Transition and Global Commitments

Prof Maria Nowmans, an environmental researcher focused on climate mobility, sat across from Minister Deigo in a Climate Action office managing the ‘Just Transition’ undertaking and implementation. Papers were spread between them, filled with migration data and stories from displaced families, and stories of how climate change is impacting lives.

“Minister,” she began, “we’re at a crossroads where climate mobility should not only be seen as a challenge but as a window for building resilience and strengthening communities. The just transition agenda shows us how.”

The minister raised an eyebrow. “But much of the attention remains on logistics—how to relocate people and manage numbers. How is just transition different for migrants and transactional families?”

“Just transition flips that script,” she explained. “Instead of treating climate-induced displacement as a problem to be managed, it reframes it as a chance to foster social inclusion. See, if we integrate mental health support directly into our migration and climate policies, displaced persons gain access to culturally sensitive care and new community connections. This goes beyond shelter and jobs—it’s about restoring hope and agency.”

The Minister nodded thoughtfully. “Mental health is often overlooked. But how do we implement this practically?”

“It’s crucial to involve those affected in the planning itself,” she replied. “Participatory decision-making means letting displaced people help design the adaptation and mobility interventions. It empowers them, reducing that deep sense of powerlessness.”

“What about livelihoods?” he asked.

“Absolutely,” she said. “Just transition also means creating decent work linked to green technologies. If we invest in green job training and support new entrepreneurship—especially in resettlement areas—we can ensure both displaced and host communities benefit. This kind of inclusive economic growth stops the marginalization that so often triggers mental health crises after displacement.”

The Minister ensured to consider this narrative. “But climate mobility is increasingly regional, even global, the movement crosses borders.”

“And that’s precisely why just transition has a transnational focus,” Maria agreed. “It urges cooperation between sending, transit, and receiving countries. Sharing data, harmonizing policies, and building regional frameworks will protect displaced people’s rights and ensure relocations are both safe and just. It aligns social, ecological, and legal safeguards.”

“So what’s the takeaway?” the Minister asked.

She smiled. “If we embed climate-induced displacement within a just transition framework, we can address the web of social and mental health challenges, while also unlocking opportunities for equitable, resilient futures. Linking environmental sustainability with social justice and mental well-being won’t just help people survive climate change—it will help them recover and thrive.”

Section 3: Narrative Assessment (work in progress)

Argument: Can AI and Urban Green Spaces Help Steer Social Equity

Urban green spaces (UGS)—parks, gardens, street trees, and patches of vegetation—are critical for sustainable, healthy, and equitable cities. They play roles not only in ecological services such as air purification and temperature regulation but also enhance social well-being by providing spaces for recreation, social contact, and stress relief. However, access to quality green spaces is often unevenly distributed, with marginalized or low-income communities frequently facing inadequate or poorly maintained green areas. This contributes to wider social inequity, exacerbating health disparities, environmental injustice, and reduced quality of life. Artificial Intelligence (AI) has emerged as a transformative tool capable of addressing these equity gaps in urban green space planning, management, and governance. By leveraging vast datasets, predictive analytics, and community engagement platforms, AI can help enable more precise, inclusive, and adaptive urban green infrastructure development.

The points listed below reflect how integrated urban green spaces can advance social equity, highlighting recent innovations, challenges, and future opportunities.

AI in Mapping and Assessing Urban Green Space Equity

One of the key steps towards equitable green space provision is accurately mapping existing green infrastructure and understanding gaps in accessibility. AI-driven remote sensing combined with satellite and drone imagery analysis offers scalable and cost-effective approaches to classify vegetation, assess canopy cover, and detect environmental degradation (Ghahramani et al., 2021; Rao et al., 2022). Unlike traditional surveys, AI enables frequent, synoptic updates providing timely data to inform resource allocations and maintenance priorities. Additionally, AI can assimilate diverse data sources—ranging from anonymized mobile phone location data to social media sentiment—to analyze how different demographic groups use and perceive green spaces (Cao et al., 2024; Stayrelevant, 2025). This behavioral data reveals patterns of park usage, revealing underserved populations and usage barriers due to cultural, physical, or economic factors. By integrating these datasets, AI can help planners identify “green deserts” where interventions are most needed (Prism Sustainability, 2025).

Fairness-Aware AI Algorithms for Discussion on Interventions

AI algorithms focused on fairness and social equity are crucial in ensuring that green space investments target vulnerable communities rather than reinforcing existing inequalities (Ghahramani et al., 2021; Prism Sustainability, 2025). These algorithms can incorporate social vulnerability indices, environmental deprivation, disability access, and socioeconomic data as constraints in optimization models for green infrastructure placement. For example, AI-powered planning tools can prioritize planting trees in neighborhoods with higher pollution exposure or health disparities, maximizing co-benefits like reducing heat-island effects where residents face disproportionate climate risks (Son et al., 2023). This data-driven, transparent approach helps municipal governments justify investments, ensuring inclusive urban environmental benefits (Stewart et al., 2020).

Enhancing Community Participation Through AI Platforms

Another component of equitable green space governance involves meaningful citizen engagement. AI platforms can facilitate participatory planning and co-creation with local communities, particularly marginalized groups often excluded from deliberations, where citizens can contribute data via mobile apps, report maintenance issues, propose improvements, and share traditional and community-specific ecological knowledge. AI-powered natural language processing tools analyze public input, detect emerging concerns, and identify diverse preferences—helping urban planners tailor green space designs to reflect community values and foster inclusivity (Ghahramani et al., 2021). These participatory AI systems empower citizens, deepen trust in local governance, and improve sustainability outcomes.

Proactive and Adaptive Space Management

Urban green spaces face dynamic environmental stressors, including climate change-induced extreme heat, droughts, and pest outbreaks. AI enables proactive management via predictive analytics, monitoring plant health in real-time through remote sensing and Internet-of-Things (IoT) sensors (Stayrelevant, 2025). Smart irrigation and nutrient application optimize resource use while enhancing green infrastructure resilience (Eco2Adapt, 2025). And, predictive models can simulate the impact of various climate scenarios on green space ecosystems and social wellbeing, allowing urban managers to adapt plans preemptively (Ghahramani et al., 2021). This reduces maintenance costs, prevents ecological degradation, and maintains equitable access to healthy green environments.

AI and Environmental Justice in Urban Design

AI support to design principles can ensure that green spaces meet diverse needs including accessibility for people with disabilities, cultural inclusivity for minority groups, and safety for vulnerable populations as algorithms can analyse walkability, transportation access, and need-specific data to optimize green infrastructure location and design, fostering safe, desired environments for all. Enhanced green space accessibility improves mental health, promotes physical activity, and strengthens social cohesion—vital components of urban equity (Barca et al., 2024; Cao et al., 2024). AI-driven urban design tools democratize nature access, contributing directly to broader health equity and environmental justice goals.

Despite its potential, equity requires careful ethical consideration. Data bias risks perpetuating social inequities unless balanced training datasets and participatory governance frameworks are established (Prism Sustainability, 2025; Bhattacharya et al., 2024). Transparency, algorithmic accountability, and community trust are vital to avoid technocratic impositions that marginalize vulnerable groups. Data privacy and digital divides present further challenges, as low-income residents may lack access to digital engagement platforms used by AI systems (IISPPR, 2025). Addressing these barriers involves inclusive technology design, capacity building, and equitable digital infrastructure investments. Cities like Barcelona and Singapore have pioneered AI integration in urban green spaces, using digital twins, sensor networks, and citizen engagement apps to optimize operations and expand equitable access (Earth Day Network, 2025; Stayrelevant, 2025). Barcelona’s AI-driven 15-minute city planning enhances green infrastructure accessibility, while Singapore employs AI for biodiversity monitoring and urban heat mitigation.

Medium- and long-term strategies for AI in addressing the climate change–mental health nexus must foreground both innovation and equity as core principles of transformative climate policy. Overall, AI presents a transformative avenue to support social equity through smarter, adaptive, and participatory urban green space management. By combining ecological data, behavioral insights, and fairness-aware algorithms, AI can facilitate planners and communities to co-create vibrant green spaces accessible to all. Overcoming challenges requires transparent practices, ethical AI use, and inclusive governance to ensure technology drives just and sustainable urban futures.

AI-driven planning can thus offer strong potential to close the gap between climate resilience, psychological health, and social inclusion. In the medium term, advancements in environmental sensing, predictive analytics, and digital modelling are enabling planners to optimize the location, design, and management of green spaces—key assets in reducing heat, supporting biodiversity, and combating stress and anxiety tied to climate change. Long-term, the promise is for genuine systems change. AI can scaffold the creation of urban “regenerative ecosystems” that do not merely coexist with nature, but actively enhance it—aligning with sustainability targets and leaving no one behind. If paired with a commitment to social equity from the start, AI can facilitate transparent, participatory planning to prioritize historically underserved neighbourhoods and ensure marginalized communities benefit from healthier environments and the mental health dividends of greenness. Art therapy, creative design can all be embedded at scale using AI-informed approaches.

AI’s practical contribution over the long term is its ability to act as a catalyst for collaborative, data-informed, and justice-driven interventions. Successfully harnessed, it can help empower communities—especially the most vulnerable—to shape, steward, and benefit from the green spaces that are essential to both climate resilience and psychological flourishing. As urban challenges intensify in the face of climate change, so must the ambition and inclusivity of our AI-enabled responses.

However, we need to be mindful of risks of algorithmic bias, digital exclusion, green gentrification, and “over-optimization”. If unchecked, AI can reinforce or even magnify inequalities in access to nature and the benefits it brings, as well as erode privacy or diminish the restorative “wildness” of urban nature. We need early and ongoing community co-creation, open-source models, transparency, and robust ethical and equity frameworks—particularly for cities with fewer resources or distinct social fabrics.

Discussion

AI can represent a pivotal frontier in advancing an inclusive agenda in this nexus and is also articulated in emerging scholarship and applied foresight studies (Sustainability Directory, 2025a, 2025b). AI-driven systems increasingly inform the planning, monitoring, and personalization of urban green spaces— for example, representing a critical dimension of climate resilience and psychosocial well-being. AI technologies can enable dynamic mapping of environmental quality, predictive maintenance of green infrastructures, and adaptive models for public engagement with nature. By facilitating *personalized interaction* with urban greenery—through digital platforms, sensor-based analytics, and participatory feedback loops—AI has the potential to strengthen the psychological and social benefits of green infrastructure, including stress reduction, enhanced cognitive restoration, and community connectedness. Yet, this technological potential is coupled with new risks of algorithmic bias and spatial inequity. The emerging scenario of “AI Bias in Urban Green Space Equity” (Sustainability Directory, 2025b) highlights the danger of producing “green deserts”—zones of limited access to restorative nature—if data-driven systems privilege affluent or digitally connected populations.

Algorithmic governance must therefore integrate equity-sensitive design principles, ensuring that access to urban nature and its associated health benefits transcends socio-economic and migratory divides. This is especially crucial for transnational and migrant communities, whose access to safe, inclusive, and restorative urban environments is often constrained by housing precarity, limited digital literacy, and policy marginalization.

The literature increasingly recognizes that urban planning decisions exert profound effects on psychological health and social well-being. Mouratidis (2021) provides a comprehensive synthesis of how built environment characteristics—including proximity to green spaces, walkability, healthcare access, and participatory design—collectively shape quality of life. Similarly, evidence from recent analyses in emphasize that inclusive, community-centered urban design enhances resilience and mitigates psychosocial distress. Integrating AI-driven planning with behavioral insights may thus yield a new paradigm of *cognitive urbanism*, wherein the design of green and built spaces consciously incorporates neuroscientific and psychological principles to foster emotional equilibrium, agency, and social cohesion.

Parallel developments are occurring in the domain of AI and workplace design, with growing recognition that environmental quality directly influences mental health, productivity, and creativity. Melikoğlu (2024) in the *Anatolian Journal of Mental Health* (2024) documents the use of AI-assisted environmental analytics—optimizing lighting, acoustics, ventilation, and spatial configurations—to reduce stress and support individualized work zones for focus or relaxation and discusses how AI-enhanced office ecosystems adapt to user feedback in real time, facilitating personalized wellness environments. For transnational workforces, particularly migrant and hybrid employees navigating cultural transitions and precarious employment, these adaptive environments may play a critical role in mitigating stress and enhancing belonging in increasingly digitized, post-pandemic work cultures.

Another expanding frontier connects AI, creativity, and biophilic design. Creative arts and multisensory interventions have demonstrated strong evidence for promoting psychological restoration and resilience. Studies such as Frasco et al. (2025) and related analyses in *PMC* (2023) and *ScienceDirect* (2025) reveal that arts-based and biophilic interventions—whether facilitated by artists or AI-curated experiences—can effectively address burnout, eco-anxiety, and psychosocial distress. By integrating these practices within urban and architectural design, planners can enhance *affective sustainability*—a framework linking environmental aesthetics with emotional well-being. The prospect of embedding AI-curated art, dynamic lighting, and sensory-responsive elements in urban green or workplace environments holds particular promise for migrant and multicultural populations, for whom spaces of cultural resonance and emotional safety are critical determinants of integration and mental health.

Concurrently, AI systems are advancing toward real-time mental wellness analytics and adaptive feedback models. AI-driven wellness platforms are increasingly capable of detecting physiological and behavioral indicators of stress, recommending mindfulness interventions, and facilitating personalized coping strategies (WellSteps, 2025). These tools move beyond static well-being assessments toward interactive, context-aware support ecosystems—an approach that may redefine occupational health and social care delivery, particularly for mobile and transnational populations. When combined with participatory governance and data ethics, such models can foster a new kind of digital climate citizenship, where citizens actively shape AI applications to reflect inclusive values and psychosocial equity.

For transnational communities, the convergence of AI, design, and mental health raises both opportunities and ethical imperatives. Migrant and diasporic groups often inhabit digitally mediated urban environments marked by uneven access to public amenities and psychosocial support. AI-enabled planning can address these disparities by mapping invisible geographies of exclusion—identifying underserved neighborhoods, optimizing resource distribution, and tailoring interventions to cultural contexts. However, ensuring algorithmic transparency and cultural sensitivity remains essential to prevent replicating structural biases through digital means. Integrating community voices into AI system design—through participatory sensing, co-creation workshops, and inclusive data governance—will be key to fostering equitable outcomes.

Overall, this emerging discourse underscores that the future of AI in urban and architectural design lies not merely in technological optimization but in human-centered innovation that bridges ecological, psychological, and cultural systems. The goal is to create *adaptive, emotionally intelligent environments* that nurture mental well-being while advancing climate resilience and social inclusion. In cities shaped by transnational mobility and cultural hybridity, AI can act as both mediator and amplifier—supporting personalized experiences of urban nature, equitable access to health-promoting environments, and collective empowerment in shaping sustainable futures.

Concluding Note

It is fair to reiterate that climate-induced displacement presents profound challenges not only to physical survival but also to mental health and social belonging, demanding reframing through mental health and transnational lenses.

Displacement driven by sudden or slow-onset climate impacts results in loss of homes, livelihoods, and community ties, leading to heightened anxiety, depression, and trauma. This mental health toll is compounded by social disconnection and cultural alienation when people are uprooted across borders. This document examines the complex nexus between climate change, human mobility, and mental health from a transnational perspective. This assessment highlights the rise in climate-induced mobility, such as forced displacement, planned relocation, and immobility, where people are trapped in vulnerable environments. We reckon that these mobility patterns occur within a context marked by political, economic, and environmental vulnerabilities. The psychosocial dimensions are central, emphasizing how displacement and immobility negatively affect mental health by a sense of powerlessness due to loss of autonomy and disruption of social and familial networks. Climate-related mobility can both reflect and exacerbate pre-existing inequalities and discrimination, impacting mental health outcomes and access to care. The experience of displacement involves loss of control and security, often compounded by cultural and language barriers in host communities, leading to social withdrawal and worsened mental health. Understanding this nexus calls for recognizing agency, ensuring mental health support is culturally sensitive and accessible, and integrating psychosocial care into climate adaptation strategies.

Using the AI-based storytelling as a knowledge and communication pathway, we explain how the ‘Just Transition principles’ offer a powerful framework to address these dimensions by ensuring that climate action supports equitable and inclusive outcomes for displaced populations and those vulnerable to mobility pressures. *A just transition approach recognizes these intertwined vulnerabilities and seeks to create pathways that restore agency, dignity, and community cohesion during the transition to greener economies and sustainable livelihoods.*

A key point made by this assessment is that AI-based storytelling holds powerful potential to transform how climate-induced human mobility and its psychosocial dimensions are understood and governed in the context of polycrisis. Artificial intelligence, when ethically and humanely deployed, can serve as a catalyst for empathy-driven policy and inclusive dialogue by translating complex data on displacement, vulnerability, and adaptation into accessible narratives that encourage collective understanding and action. The responsible use of AI in this space could allow policymakers, educators, and *communities to visualize intertwined social, mental health, and environmental stressors*, fostering early interventions and preventive resilience building.

By anchoring AI-based storytelling in climate mobility policies and commitments, global commitments such as the Sustainable Development Goals (SDGs) and the GCM could be advanced. This visually appealing approach can help shift the discourse from reactive displacement management to proactive resilience and social inclusion, strengthening cross-border solidarity and human security. Furthermore, integrating participatory AI storytelling within policy design can reveal hidden human experiences behind migration data, including the emotional and psychosocial struggles of transnational families adapting to new or uncertain futures. The need for a human-centered communication strategy is central to addressing mental health awareness and supports inclusive policymaking that bridges scientific knowledge with lived realities.

For example, in the European context, countries and regions where migration and mobility in the past decades have resulted in communities and neighbourhoods where transnational families often experience persistent separation and anxiety linked to relocation and job insecurity, AI-enhanced narratives could help educators, local governments, and civil society organizations design interventions that balance climate adaptation with psychosocial well-being. Tools like dialogue mapping and AI-assisted participatory analysis in schools and community centers can illuminate how climate change affects emotional stability, identity, and belonging across generations (Raja et al., 2025). We conclude that by positioning AI storytelling as both a communicative practice and a governance tool, we can translate the complexity of climate mobility into shared understanding and coordinated action across regions and disciplines. By bridging emotional intelligence with technological innovation, AI storytelling strengthens the human fabric of climate citizenship and ensures that migration, mental health, and policy integration advance together toward equitable, just, and compassionate futures. Overall, it is concluded that effective responses could enable both the possibility of adapting in place and ensuring dignified mobility when movement becomes inevitable. Central to this reframing is the prioritization of agency, cultural continuity, and social inclusion, recognizing that the well-being of climate-affected populations depends not only on physical safety but also on emotional resilience, collective memory, and the preservation of human connections in an increasingly disrupted world.

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