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AI-Enabled Mental-Health Interventions for Climate-Related Distress: A Call for Coordinated EU Policy Action

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Executive Summary

This brief assesses the emerging intersection between climate change, mental health challenges, and artificial intelligence tools across Europe. AI-driven mental health solutions such as chatbots and self-help applications are proliferating; however, none specifically target climate-related distress such as eco-anxiety, solastalgia etc. and they often operate commercially with limited ties to public health or climate adaptation systems. Unlike general anxiety, climate related mental health distress is driven by long-term environmental threats and is often chronic in nature which highlight the need for targeted intervention. Yet, this distinction is still not fully reflected in existing policies and dihgital interventions. Despite the EU AI Act and rapid digital innovation in health, integration of AI within mental health systems remains fragmented and insufficiently aligned with climate resilience planning.

The existing evidence categorizes AI interventions leveraging Natural Language Processing (NLP), machine learning, and adaptive algorithms for real-time emotional support, risk detection, and tailored responses. While promising, these tools lack climate-sensitive design, proven efficacy, accountability mechanisms, and adaptation to local climate risks. Fragmentation across national health systems, regulatory approaches, languages, and digital infrastructures further constrains scalability and equitable access.

Highlights

- AI-enabled mental health tools are expanding across Europe, yet remains fragmented, climate-blind, commercially driven and weakly integrated into the public mental health system.

- Strengthening and adapting existing AI-enabled mental health tools through EU-level sector-specific standards, climate-sensitive safeguards, and cross-sectoral collaboration might offer pragmatic pathway for coordinated European action.

- Persistent evidence gaps, digital inequities and ethical governance weaknesses risk amplifying harm by excluding climate-vulnerable population from the emerging AI-enabled mental health support.

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The objective of this brief is to identify critical research and policy gaps in using AI to address climate-related psychological distress. We specifically reflect on four critical gaps: the divide between clinical and commercial usage, the absence of emergency safeguards under current AI governance, persistent digital inequities affecting climate-vulnerable population, and ethical and data governance weaknesses. To translate these insights into tangible solutions, the brief provides an "Action Priority Matrix". This tool visually sorts recommendations by anticipated impact and implementation effort, by distinguishing immediate regulatory standards from high-effort strategies like interdisciplinary AI literacy.

Climate related Mental Health Distress in Europe

Climate change is now recognized not only as an environmental and economic crisis but also as a major global mental health challenge. Rising temperatures, extreme weather events, biodiversity loss, ecological degradation, and climate related displacements are adversely affecting the psychological well-being of individuals and communities worldwide.

Research indicates that the likelihood of psychological trauma during climate related extreme events is up to 40 times higher than the risk of physical injuries (Lawrance et al., 2022). Direct climate hazards such as floods, heatwaves, wildfires, droughts, cyclones might increase the rate of anxiety, depression, post-traumatic stress syndrome (PTSD), substance use and suicidal tendency (Sharpe & Davison, 2021). Apart from these direct impacts, the indirect stressors such as future uncertainty, a perceived loss of connection with familiar nature, and the disruption of the socio-economic systems further shape negative mental health outcomes (Boivin et al., 2025).

Though countries from global south were historically the first-hand exposure to such effects, European countries are no longer exception (Bednar-Friedl et al., 2022). The impact across Europe is unevenly distributed: Southern and Eastern Europe confront intense heatwaves and droughts, while Northern and Central regions experience increasing floods and storms (European Environment Agency, 2024).

These region-specific stressors intersect with the existing health system capacities, demographic trends. (Brandt et al., 2024). Terms such as climate distress, eco anxiety, solastalgia are now widely used across Europe to describe the psychological responses to climate change (Coffey et al., 2021; Vela Sandquist et al., 2025). While these are not explicitly classified as mental disorders (Hickman et al., 2021), they contribute to clinically significant distress, functional impairment and heightened vulnerability among youth, women and climate-exposed marginalized communities (Coffey et al., 2021; White et al., 2023; Vela Sandquist et al., 2025).

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The Digital Shift: AI as a New Frontier in Mental Health Support

Importantly, such climate-related distresses are often articulated outside traditional clinical settings (Wasmus et al., 2025). Individuals are increasingly seeking support through online communities, social media platforms and digital self-help groups (Climate & Mind, 2019). The integration of Artificial Intelligence (AI) in this field, such as Chatbots, self-help mobile applications also positioned this discussion further beyond the formal health system (Ni & Jia, 2025).

AI techniques including Natural Language Processing (NLP), machine learning, sentiment analysis, and adaptive algorithms are being integrated into these tools. They provide (1) real-time emotional regulation and support, peer-connection, mental health literacy, (2) early risk identification and just-in-time intervention, and (3) tailored content based on specific climate risks or user emotional states (Ni & Jia, 2025; von Lützow et al., 2025)

While these digital tools offer a high-availability, low-threshold alternative to professional and formal human care, there deployment outside formal clinical settings raises critical questions. The effectiveness, safety, ethical transparency of AI-driven interventions remains urgent concerns, especially when they operate without the supervision of established clinical standards and safeguard measures (Duffourc et al., 2025; Rahsepar Meadi et al., 2025).

AI-Enabled Mental Health Intervention in Response to Climate-Related Distress Across Europe

European countries are unique but challenging position in the deployment of AI for climate-related mental health problems (Brandt et al., 2024). Despite the high number of developments of numerous digital tools; their regulation, evaluation, and integration in public health systems remain fragmented (Ni & Jia, 2025). Differences in national health systems, regulatory approaches, languages, and digital infrastructures shape how AI-enabled tools are accessed and used in Europe (Duffourc et al., 2025).

The key mental health interventions can be categorized into three areas:

AI Chatbots:

Interactive AI-driven chatbots such as Wysa, Woebot, Youper and even ChatGPT are emerging as low-threshold tools for providing psychoeducation and emotional support particularly among younger users. Ask Climate-ADAPT, on the other hand, helps the users to explore verified data, gain knowledge, and find resources from three major platforms through chat: the Climate-ADAPT database, the European Climate and Health Observatory, and the EU Mission on Adaptation Portal in various European national languages. However, they are knowledge tools, not therapeutic ones as they cannot yet provide the emotional regulation required by a user experiencing an acute climate related distress. Moreover, none of these chatbots have proven effectiveness in addressing climate-specific mental health outcomes and clear accountability mechanisms.

Self-Help Applications:

General self-help mental health applications, such as MindDoc, MindShift-Anxiety, MoodTools are widely available across Europe and are increasingly used to manage stress and anxiety (Maltzeva, 2025). However, most apps are not specifically designed to address climate-related mental health stressors and lack adaptation to local climate risks, despite their growing reach. Meanwhile, Genjo, Climate Mind, MindLAMP2 (Gooding et al., 2024), Eco-anxious and climate awakening (Bhawra et al., 2024) are providing mental health support related to environmental uncertainty.

Online Community or Peer Support:

Online communities and peer-support platforms such as Eco-Anxious Stories, good grief network, klimacafe (Climate Cafe), Youth and Environment Europe (YEE) play an important role in creating a platform for people with lived experience of climate related distress and fostering social connection. However, these platforms might lack professional moderation and safeguards, raising concerns about misinformation, emotional escalation, and unequal access to reliable mental health support (Bizzotto et al., 2023; Parnes & Weiss, 2024).

Policy Recommendations

Recent global policy discussions, including the recent report by UNU-CPR has highlighted the growing potential of AI's role to serve humanity (Fournier-Tombs, Siddiqui, & Ham, 2025). However, current discussions remain largely oriented towards use of AI in early warning systems, disaster management and crisis response, with a very limited emphasis on integrating AI-based interventions into climate change related mental health distress as a core component of climate adaptation and resilience planning. This policy brief responds to this gap by proposing some actionable recommendations in four strategic pillars for coordinated EU action.

1. Regulatory Standardization:

Priority actions:

- Define minimum clinical safety requirements for AI tools operating in high-stress climate context
- Mandate minimal accountability mechanisms for algorithmic decisions, especially those involving crisis triage or suicide risk assessment.
- Require impact assessment that will explicitly evaluate psychological harms linked to climate-related distress.

Target Actors: European Commission, National health ministries and data protection authorities.

2. Technical and Clinical Service Innovation:

Priority actions:

- Integrate climate-sensitive features, such as psychoeducation, coping mechanism with multilingual functionality and culturally adaptive climate-risk information into existing digital tools.
- Conduct pilot projects and real-world evaluation to assess the effectiveness, safety and equity of the tools.
- Align deployment with public mental health services to ensure clear referral pathway and inter-operability.

Target Actors: Digital tool developers, Mental health service providers, Research institutions, Public-private partnership.

3. Governance and Strategic Resilience:

Priority actions:

• Integrate AI-enabled mental health tools into national and regional climate adaptation strategies.

• Establish cross-sectoral collaboration with platforms linking climate experts, mental health professionals and AI governance bodies.

• Develop deployment guideline prioritizing climate-vulnerable population (e.g. older adults, migrants, low-income groups and displaced populations).

Target Actors: National and regional governing bodies, public health authorities, EU climate agencies, NGOs

4. Capacity development and Human Oversight:

Priority actions:

• Develop AI and climate-mental health literacy programs for practitioners, policymakers and community leaders.

• Expand digital inclusion initiatives targeting climate-vulnerable populations. Ensure continuous human oversight in high-risk scenarios, particularly during climate related emergencies

Target Actors: Training institutions, NGOs, local governments, health and digital professionals.

	Low Effort	High Effort
High Impact	• Leverage and adapt existing AI-enabled mental health tools with climate-sensitive features • Establish sector-specific standards under the EU-AI act • Issue EU-level guidance for AI chatbots and apps operating outside formal public mental health system	• Integrate AI enabled tools in public mental health system and Climate adaptation strategies • Strengthen digital equity and AI literacy through targeted capacity-building • Invest in long term, secure AI infrastructure and inter-disciplinary research
Low Impact	• Support moderated online peer support and community platforms addressing climate related distresses • Provide community level guideline and toolkit to support responsible use of AI-enabled mental health tools	• Experimental or unvalidated AI applications for climate related mental health problems • Large-scale deployment without prior evidence • Full automation of mental health system without human oversight

Figure: Action Priority Matrix for AI-enabled mental health interventions addressing climate change related mental health distress across Europe

The action priority matrix categorizes the proposed policy actions based on existing evidence from Europe regarding AI-enabled mental health interventions, their anticipated impact on climate change related mental health outcomes and the level of efforts required for implementation. High-impact, low-effort actions represent immediate policy actions (quick win tasks) where timely intervention is crucial and failure to act in these areas might result in negative consequences. While high-impact, high-effort actions require strategic planning, coordinated investment, governance reform, long-term research and longer implementation timeline for lasting impact. Low-impact, low-effort actions are referred to as filler tasks that offer supportive benefits but not a substitute for systemic intervention; whereas low impact, high-effort actions indicate areas where caution is warranted due to limited evidence, ethical risks, or uncertain benefits.

Looking Ahead

As we point to the emerging evidence to identify key problem, existing interventions, critical structural gaps, and policy recommendations for integrating AI-enabled mental health support into Europe's climate adaptation agenda and recommend pragmatic and actionable solutions , urging EU-level sector-specific standards for safety and integration, climate-responsive features in existing tools (with inclusivity, multilingualism, and oversight), AI literacy programs through cross-sector collaboration. Embedding these measures within national and regional climate adaptation strategies would position mental health as a core pillar during resilience planning.

We conclude with a forward-looking call for coordinated European action to ensure equitable, evidence-based AI deployment amid rising climate-related psychological distress, which could be further reinforced by the recent establishment of UN Independent International Scientific Panel on AI (United Nations General Assembly, 2025).

Since climate-related psychological distress continues to rise, Europe must move beyond the traditional mental health approaches and adopt AI-enabled tools to mitigate these challenges. Key priorities include strengthening existing AI tools, embedding climate-related mental health specific safeguards, expanding research on effectiveness and equity of those interventions and fostering cross-sectoral collaboration across health, climate and technology sectors. A well-coordinated European approach is required to ensure safe, evidence-informed, equitable and accessible AI-enabled mental health interventions to effectively address climate related psychological distress.

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Appendix

List of mental health interventions referenced in the policy brief:

Name	Category	Access Link
Wysa	AI Chatbot	https://apps.apple.com/in/app/wysa-mental-wellbeing-ai/id1166585565
Woebot	AI Chatbot	https://woebothealth.com/for-users/
Youper	AI Chatbot	https://play.google.com/store/apps/details?id=br.com.youper&hl=en
ChatGPT	AI Chatbot	https://chatgpt.com/
Ask Climate-ADAPT	Resource based chatbot	https://climate-adapt.eea.europa.eu/en/ai-search-assistant
MindDoc	Mental health app	https://minddoc.com/us/en
MindShift	Mental health app	https://mindshiftcbt.com/
MoodTools	Mental health app	https://moodtools.org/
Genjo	Climate focused app	https://genjo.app/
Climate Mind	Climate focused mental health resources	https://climatemind.org/
MindLAM P2	Clinical and research app	https://play.google.com/store/apps/details?id=digital.lamp.mindlamp&hl=en
Climate Awakening	Peer support network	https://climateawakening.org/about/
Eco-Anxious Stories	Online community	https://ecoanxious.ca/
Good Gried Network	Peer support network	https://goodgriefnetwork.org/
Climate Cafe	Peer support network	https://climatecafe.nl/
YEE	Youth-network	https://yeenet.eu/about-yee/About

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