



OPEN ACCESS

EDITED BY

Hanadi Rifai,
University of Houston, United States

REVIEWED BY

Tufa Dinku,
Columbia University, United States
Suiven John Paul Tume,
The University of Bamenda, Cameroon

*CORRESPONDENCE

Abdullahi Ahmed Tahlil
✉ abdullahi.tahlily@gmail.com

RECEIVED 16 September 2025

REVISED 13 November 2025

ACCEPTED 18 November 2025

PUBLISHED 08 December 2025

CITATION

Tahlil AA (2025) Africa's climate leadership and health resilience: insights from the 2nd Africa Climate Summit, Addis Ababa, 2025. *Front. Clim.* 7:1706512. doi: 10.3389/fclim.2025.1706512

COPYRIGHT

© 2025 Tahlil. This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Africa's climate leadership and health resilience: insights from the 2nd Africa Climate Summit, Addis Ababa, 2025

Abdullahi Ahmed Tahlil^{1,2,3,4*}

¹Public Health Emergency Management Fellow, Africa Centres for Disease Control and Prevention, Addis Ababa, Ethiopia, ²Faculty of Medicine and Health Sciences, Zamzam University of Science and Technology, Mogadishu, Somalia, ³School of Public Health and Research, Somali National University, Mogadishu, Somalia, ⁴National Institute of Health, Ministry of Health and Human Services, Mogadishu, Somalia

Introduction: The 2nd Africa Climate Summit (ACS2), held in Addis Ababa, Ethiopia, in September 2025, marked a significant shift in Africa's climate leadership, positioning the continent not only as a victim of climate change but also as a key solutions provider. Africa faces severe climate impacts despite contributing minimally to global greenhouse gas emissions, with consequences including health crises and economic losses. This paper explores the outcomes of ACS2 and the intersection of climate action and health resilience, outlining the continent's commitments to renewable energy, climate finance, and nature-based solutions.

Methods: This study employs a policy review and analytical synthesis of official summit documents, including the Addis Ababa Declaration, technical reports, and expert session transcripts. Data was coded and analyzed across five key themes: climate finance, renewable energy, climate-health integration, nature-based solutions, and global climate diplomacy. The research also incorporates media briefings and partner reports to provide a comprehensive understanding of ACS2's commitments and challenges.

Results: ACS2 produced groundbreaking commitments, such as the launch of the African Climate Facility (ACF) to mobilize \$50 billion annually for climate solutions and the integration of health resilience in climate policy. The Addis Ababa Declaration emphasized climate justice, linking development and climate action. Key initiatives, such as the Africa Green Industrialization Initiative and the African Forest Landscape Restoration Initiative, demonstrate Africa's commitment to green industrialization and environmental restoration. The summit also prioritized renewable energy, setting ambitious targets for clean energy access and green growth.

Discussion: While ACS2 marks a pivotal moment in Africa's climate diplomacy, several implementation challenges remain, including financing gaps and institutional capacity constraints. Despite substantial financial pledges, Africa's climate finance needs far exceed current commitments, and there are concerns regarding the adequacy of climate finance mechanisms. The paper discusses how ACS2's outcomes align with Africa's broader climate goals and offers policy recommendations for overcoming barriers to implementation. Additionally, it underscores the inseparability of climate justice and health resilience, stressing the importance of integrated solutions to both climate and health crises.

KEYWORDS

Africa Climate Summit 2, climate finance, renewable energy, health resilience, Addis Ababa Declaration, Africa

1 Introduction

Climate change represents the most significant challenge to sustainable development in the 21st century, with the potential to reverse decades of progress in poverty reduction, health improvement, and economic growth across Africa (Cai, 2025). Despite contributing less than 4% of global greenhouse gas emissions, Africa bears the disproportionate burden of climate impacts, including intensifying droughts, floods, extreme heat events, food insecurity, and public health crises (Moyo et al., 2023). The continent's vulnerability is exacerbated by pre-existing challenges such as infrastructure deficits, limited access to finance, weak health systems, and governance constraints. Recent statistics underscore this vulnerability: in 2024 alone, flooding affected 7.5 million people across 18 African countries, damaging over 649,000 homes and rendering 960,000 hectares of farmland unusable (Wright et al., 2024). These climate-related disasters have resulted in significant economic and non-economic losses, with Africa expected to face climate-related costs between \$290–\$440 billion between 2020 and 2030 (Wright et al., 2024). Despite these challenges, Africa possesses immense potential to contribute to global climate solutions. The continent has the world's largest renewable energy potential, abundant natural resources, and a young, innovative population.

The Second Africa Climate Summit (ACS2) represents a pivotal moment in Africa's climate leadership journey, building upon the foundation established by the inaugural summit in Nairobi (2023). This gathering of over 45 Heads of State and more than 25,000 delegates from across Africa and beyond demonstrates the continent's unified commitment to addressing climate challenges through collaborative action and innovative solutions. Held in Addis Ababa, Ethiopia, from September 8–10, 2025, ACS2 operated under the powerful theme: “*Accelerating Global Climate Solutions: Financing for Africa's Resilient and Green Development*.” This summit marks a transformative shift in Africa's approach to climate change—from seeking aid to demanding climate justice and positioning itself as a solutions hub for global climate challenges.

The summit served as a crucial platform for consolidating Africa's collective position on climate finance, adaptation, mitigation, and loss and damage, while showcasing homegrown solutions that have potential for global impact. ACS2 was built on the inaugural Nairobi Declaration (2023), transitioning from agenda-setting to concrete commitments and implementation frameworks. This paper reviews the outcomes of ACS2, focusing on climate finance, renewable energy transitions, the climate-health nexus, and nature-based resilience, while identifying implementation challenges and policy pathways. Furthermore, it explores the health and development implications of these outcomes, identifies critical implementation gaps, and presents

evidence-based policy recommendations for governments, donors, and institutions committed to advancing climate justice.

2 Methods

This study employs a comprehensive policy review and analytical synthesis approach to examine the outcomes and implications of the Second Africa Climate Summit. The methodology involves systematic analysis of official summit documents, including the Addis Ababa Declaration, technical reports, side event summaries, and expert session transcripts. Additionally, the research incorporates a review of communiqués, media briefings, and partner organization reports to capture diverse perspectives on summit outcomes. Key information was systematically extracted from collected documents using a standardized coding framework. This included financial commitments, policy announcements, implementation mechanisms, and accountability measures. Extracted data was organized under five primary thematic domains: (1) climate finance architecture; (2) renewable energy and green industrialization; (3) climate-health integration; (4) nature-based solutions and resilience; and (5) global climate diplomacy positioning. Media briefings and press statements were analyzed to identify contrasting viewpoints and potential implementation challenges. Findings were cross-verified across multiple document types to ensure accuracy and comprehensiveness of the analysis. The analytical approach emphasizes contextual interpretation of commitments within Africa's broader climate and development landscape, drawing connections between ACS2 outcomes and existing frameworks, including Agenda 2063, Nationally Determined Contributions, and the Sustainable Development Goals.

2.1 Limitations

This review relied primarily on summit-related documents, which may reflect official narratives and political priorities. Independent verification of financial commitments and implementation status was beyond the study's scope.

3 Results: key outcomes of ACS2

3.1 The Addis Ababa Declaration: a framework for African climate leadership

The Addis Ababa Declaration represents a foundational document that positions climate change as both a survival imperative and a development priority for Africa. The Declaration emerged from extensive negotiations among African heads of state and embodies a unified continental position on climate action. Its core principles include climate justice, common but differentiated responsibilities, and the right to development. The Declaration explicitly frames climate finance as a form of reparative justice rather than aid, demanding that developed nations honor their historical responsibilities.

The Declaration contains several groundbreaking elements that distinguish it from previous continental climate agreements. First, it establishes a mechanism for accountability through the AU Climate Action Dashboard, which will track implementation

Abbreviation: ACS2, Africa Climate Summit 2 (Second Africa Climate Summit); AU, African Union; ACF, Africa Climate Facility; ACIC, Africa Climate Innovation Compact; CJIFA, Climate Justice Impact Fund for Africa; AGII, Africa Green Industrialization Initiative; AAAP, Africa Adaptation Acceleration Program; AfDB, African Development Bank; Afreximbank, African Export–Import Bank; AFR100, African Forest Landscape Restoration Initiative; JRF, Just Resilience Framework (Africa Just Resilience Framework); COP30, 30th Conference of the Parties (UNFCCC); NDCs, Nationally Determined Contributions; SDGs, Sustainable Development Goals; UNEP, United Nations Environment Programme.

TABLE 1 Major climate finance initiatives launched at ACS2.

Initiative	Lead institution	Funding target	Primary focus
Africa climate facility (ACF)	African Development Bank	\$50 billion annually	Catalytic finance for adaptation and mitigation
Africa Climate Innovation Compact (ACIC)	The Ethiopian Government, with the African Union	1,000 solutions by 2030	Supporting African-led climate innovations
Climate Justice Impact Fund for Africa (CJIFA)	Multiple partners	Not specified	Grassroots innovation for youth and women
Africa Green Industrialization Initiative	African Development Bank, Afreximbank, Africa50	\$100 billion	Green industrialization and renewable energy
Africa Adaptation Acceleration Program (AAP) 2.0	Global Center on Adaptation	\$50 billion by 2030	Climate-proofing infrastructure and food systems

of commitments and ensure transparency. Second, it integrates economic development directly with climate action, explicitly linking investments in renewable energy, green industrialization, and climate-smart agriculture with job creation and economic transformation. Third, it emphasizes African agency in climate governance, demanding reformed global financial institutions with increased African representation. Specifically, the Declaration calls for “strengthened and sustained support to scale up the implementation of African-led climate initiatives such as the African Union Great Green Wall Initiative, the African Forest Landscape Restoration Initiative, and the Ethiopian Green Legacy Initiative.” This represents a strategic shift toward promoting homegrown solutions that are adapted to African contexts and priorities. The Declaration also serves as Africa’s collective bargaining position for COP30 in Brazil, establishing non-negotiable elements including debt relief, grant-based adaptation finance, and technology transfer.

3.2 Climate finance commitments: bridging the adaptation gap

ACS2 produced unprecedented financial commitments aimed at addressing Africa’s massive climate financing gap. The centerpiece was the launch of the African Climate Facility (ACF) and Africa Climate Innovation Compact (ACIC), which together aim to mobilize \$50 billion annually in catalytic finance for African climate solutions. The ACF will operate as a dedicated financial mechanism under the African Development Bank, channeling green bonds and innovative financing instruments designed for Africa’s specific context and needs (Table 1).

The summit emphasized grant-based adaptation finance over loans to prevent the exacerbation of Africa’s debt burden. African leaders emphasized that adaptation finance should be considered a legal obligation of developed nations under historical responsibility, rather than voluntary aid. This position challenges the current architecture of climate finance, which predominantly comes in the form of loans that increase Africa’s debt distress. Additional significant financial commitments included Italy’s reaffirmation of its \$4.2 billion Climate Fund with 70% dedicated to Africa, Denmark’s \$79 million for agricultural transformation, and the European Investment Bank’s commitment to support €100 billion of investment by 2027. African financial institutions, including Afreximbank and Africa50, signed a landmark

cooperation framework to operationalize the Africa Green Industrialization Initiative (AGII), backed by \$100 billion mobilized for green growth.

3.3 Renewable energy and green industrialization: powering Africa’s future

ACS2 advanced ambitious energy transition goals that recognize Africa’s immense renewable energy potential. Leaders are committed to increasing Africa’s share of global renewable energy investments from less than 2% currently to at least 20% by 2030, which would represent a tenfold increase in investment flows. This expansion is essential for closing the electricity access gap that currently leaves approximately 623 million Africans without reliable power. The summit showcased several transformative initiatives aimed at harnessing Africa’s renewable resources. The Mission 300 Agenda aims to ensure that 300 million Africans gain access to modern energy while 900 million gain access to clean cooking solutions within the decade. This initiative addresses both energy poverty and its gendered impacts, as women and girls disproportionately bear the health and time burdens associated with traditional cooking methods.

The Green Minerals Strategy launched at ACS2 represents a critical framework for ensuring that Africa’s vast mineral resources (including cobalt, lithium, and rare earth elements) fuel not only global clean energy supply chains but also local beneficiation, job creation, and industrialization. This strategy challenges the extractive model that has historically characterized Africa’s mining sector, instead promoting value addition within African countries.

3.4 Climate and health nexus: integrating public health into climate action

ACS2 marked a significant advancement in integrating health considerations within climate policy frameworks. The summit explicitly recognized that “*climate justice is health justice*,” acknowledging the disproportionate health burdens that climate change imposes on African populations. The discussions highlighted how climate change exacerbates health vulnerabilities through multiple pathways: increasing heat stress, expanding the range of vector-borne diseases like malaria and dengue,

compromising water quality, and undermining food and nutrition security. The summit produced several specific commitments aimed at strengthening health system resilience. These included integrating climate services into health surveillance systems, solarizing health facilities to ensure reliable energy, and investing in climate-smart agricultural practices to improve nutrition. The newly launched Africa Just Resilience Framework (JRF) will work alongside the Climate Justice Impact Fund for Africa (CJIFA) to provide both framework and funding for local climate-health initiatives.

The Pre-Summit Forum on “*Media as a Catalyst for Africa’s Climate Change, Peace and Security Agenda*” further emphasized the need for intersectional approaches that address the climate-health-peace nexus. The resulting Addis Ababa Declaration on Media, Climate, Peace, Security and Justice calls for climate finance that “*prioritizes adaptation in fragile contexts, incorporates gender equality, social inclusion, and supports youth and women-led solutions.*” This reflects growing recognition that climate vulnerability, health insecurity, and conflict dynamics often reinforce each other in complex cycles.

The health dimension of the ACS2 outcomes extends beyond sectoral considerations; it represents a cross-cutting pillar of Africa’s climate resilience agenda. Recognizing that climate change amplifies both communicable and non-communicable disease burdens, Summit leaders emphasized integrating health metrics into climate adaptation monitoring and finance frameworks. This includes establishing regional centers of excellence on climate-induced health risks under the Africa CDC and harmonizing data systems for joint surveillance of climate and health indicators. Such integration ensures that climate finance not only supports infrastructure and energy transitions but also directly contributes to healthier, more resilient communities. By embedding health resilience within every pillar of climate action—from agriculture to energy and urban planning—Africa advances a holistic model of sustainable development that positions health as both a beneficiary and a driver of climate justice.

3.5 Nature-based solutions and resilience: working with Africa’s natural capital

ACS2 showcased Africa’s rich natural heritage as a foundation for climate resilience and sustainable development. The summit emphasized nature-based solutions as cost-effective approaches that simultaneously address climate mitigation, adaptation, biodiversity conservation, and livelihood security. Large-scale initiatives like the Great Green Wall, the African Forest Landscape Restoration Initiative (AFR100), and Ethiopia’s Green Legacy received prominent attention as proven models for restoring degraded landscapes at a continental scale. The discussions highlighted the multiple benefits of nature-based solutions, including their capacity to serve as carbon sinks, enhance water security, prevent desertification, and protect biodiversity. Such initiatives demonstrate how ecological restoration can simultaneously address environmental and development objectives.

The summit also addressed coastal resilience through the protection and restoration of mangroves, coral reefs, and other critical ecosystems that provide natural buffers against storm surges and sea-level rise. With African coastlines experiencing sea-level rise at rates exceeding the global average, these nature-based solutions offer cost-effective protection for vulnerable coastal communities and infrastructure.

4 Challenges and implementation gaps

Despite the ambitious commitments made at ACS2, significant implementation challenges threaten to undermine their impact. The first concern involves the financing shortfall – while the \$50 billion annual target represents substantial progress, it remains well below Africa’s estimated climate finance needs. UNEP estimates that Africa requires approximately \$190 billion annually for adaptation and land restoration alone, suggesting that even with the new commitments, a substantial financing gap remains (Wright et al., 2024). The structure of climate finance also presents challenges. Despite rhetoric emphasizing grants over loans, the majority of committed funds remain in the form of debt-creating instruments. Many African nations already carry unsustainable debt burdens, with climate-vulnerable countries often among the most indebted. This creates a perverse cycle: countries must borrow to adapt to challenges they did not cause. Such borrowing worsens fiscal stress and reduces adaptive capacity.

Institutional capacity limitations represent another critical barrier to implementation. Many African nations lack the technical expertise, governance frameworks, and administrative systems necessary to design, implement, and monitor large-scale climate programs. This capacity gap is particularly pronounced for integrated climate-health initiatives, which require coordination across multiple ministerial portfolios and governance levels (Sibiya et al., 2023). There are also concerns about policy coherence and alignment across sectors. Climate action requires integrated approaches that span energy, agriculture, health, transportation, and urban planning sectors. However, many African governments continue to operate within siloed ministerial structures with limited mechanisms for cross-sectoral coordination. This can lead to inefficient resource allocation and contradictory policies that undermine climate resilience (England et al., 2018). Finally, accountability mechanisms remain weak despite the launch of the AU Climate Action Dashboard. Most African countries lack robust monitoring, reporting, and verification systems to track climate finance flows and measure implementation progress. Without transparent accountability systems, declarations risk remaining symbolic gestures rather than catalysts for concrete action (Wabwire and Ondabu, 2025).

5 Discussion

ACS2 represents a paradigm shift in Africa’s climate diplomacy, reframing the continent’s role from climate victim to climate solutions provider. This repositioning has profound implications for global climate governance and Africa’s development trajectory. The summit demonstrated Africa’s

growing assertiveness in demanding climate justice and challenging inequitable global systems. The explicit integration of health considerations within climate action represents significant progress in addressing climate-vulnerable sectors. The climate-health nexus is particularly critical for Africa, where weak health systems and high disease burdens coincide with heightened climate vulnerability. Research shows that climate change is already amplifying health risks across Africa, from expanding malaria transmission zones to increasing heat-related mortality (Ryan et al., 2020). The commitments made at ACS2 acknowledge these interconnections and represent an important step toward climate-resilient health systems.

The emphasis on green industrialization and local processing of critical minerals reflects Africa's determination to break from colonial patterns of raw material extraction. By leveraging its mineral wealth for domestic value addition, Africa can capture more of the economic benefits from the global clean energy transition while creating urgently needed jobs for its youthful population. However, realizing this vision will require overcoming substantial challenges, including infrastructure gaps, skills shortages, and competitive pressures from established manufacturing hubs (African Mineral Development Centre, 2025). The summit's outcomes also reveal tensions and contradictions in Africa's climate positioning. While demanding climate justice and reparative finance, many African governments continue to pursue fossil fuel development as part of their energy and economic strategies. This creates ambiguity in Africa's climate leadership and could undermine its moral authority in global negotiations. Resolving this tension will require careful balancing of development rights with climate responsibilities (African Union, 2025).

Beyond the general recognition of the climate-health nexus, ACS2's outcomes have direct implications for strengthening Africa's health resilience. The commitments to expand renewable energy, scale up climate-smart agriculture, and mobilize adaptation finance have profound potential to reduce health risks linked to climate stressors such as heatwaves, vector-borne diseases, malnutrition, and water-borne infections. Integrating climate considerations into national health systems, as endorsed through the Africa Just Resilience Framework and the Climate Justice Impact Fund for Africa, can enhance early warning systems, disease surveillance, and the climate-proofing of health facilities. Moreover, by promoting solarization of primary health centers and investing in green supply chains for essential medicines, the Summit's outcomes align with WHO's call for climate-resilient health systems. This highlights that advancing Africa's climate leadership is inseparable from advancing population health, positioning ACS2 as a key moment in mainstreaming health within climate diplomacy and development planning.

The gender dimensions of climate action received increased but still insufficient attention at ACS2. While the Climate Justice Impact Fund for Africa specifically targets women and youth, most mainstage commitments remained gender-blind in their formulation. Research shows that climate impacts disproportionately affect women due to structural inequalities and gendered social roles (Djako et al., 2024). Effective climate action must therefore incorporate gender-responsive approaches

that address these differential vulnerabilities and promote women's leadership in climate solutions. Finally, the success of ACS2 commitments will ultimately depend on implementation effectiveness rather than rhetorical ambition. Africa has produced multiple visionary frameworks, yet implementation has often lagged behind commitments. The true measure of ACS2's success will be whether its commitments translate into tangible improvements in climate resilience, health outcomes, and economic opportunities for ordinary Africans.

6 Policy recommendations

Based on the outcomes, health implications, and gaps identified, the following policy pathways are proposed:

Actor	Recommended actions
National Governments	<ol style="list-style-type: none"> 1. Incorporate climate-health assessments into national health and adaptation plans. 2. Build cross-sectoral coordination between ministries of health, environment, finance, and energy. 3. Develop bankable project proposals targeted at ACE, ACIC, and CJIFA with clear metrics for health outcomes. 4. Prioritize grants and concessional funding for adaptation, especially in vulnerable regions.
African Union/ Regional Bodies	<ol style="list-style-type: none"> 1. Operationalize the AU Climate Action Dashboard with transparent indicators and periodic public reporting. 2. Facilitate capacity building and knowledge sharing among member states (e.g., renewable energy best practices, health infrastructure resilience). 3. Advocate collectively in global forums (e.g., COP30) for better terms in climate finance agreements.
Donors, Multilateral Agencies, Private Sector	<ol style="list-style-type: none"> 1. Increase allocation for adaptation and health-focused climate investments. 2. Offer a grant or highly concessional financing, and reduce dependence on loans. 3. Support technical assistance and long-term investments in infrastructure and human capacity. 4. Facilitate public-private partnerships for green industry, renewable energy, and resilient health systems.
Civil Society, Academia, Communities	<ol style="list-style-type: none"> 1. Conduct evidence-based studies on climate-health interactions to inform policy and funding priorities. 2. Ensure local communities and marginalized groups are included in policy design and implementation. 3. Monitor government and institutional commitments; promote transparency.

7 Conclusion

The ACS2 in Addis Ababa marks a decisive moment for Africa: commitments made under the Addis Ababa Declaration, especially on climate finance, renewable energy expansion, and climate-health integration, set a roadmap for action. However, the path from rhetoric to reality demands sustained political will,

equitable financing, capacity building, robust institutions, and mechanisms for accountability. As Africa prepares for COP30 and beyond, realizing Summit outcomes will not only determine the continent's resilience but will make a critical contribution to global climate justice. The true test of ACS2 will be whether its bold commitments translate into tangible resilience for Africa's people and meaningful contributions to global climate justice.

Author contributions

AT: Conceptualization, Data curation, Formal analysis, Methodology, Resources, Validation, Writing – original draft, Writing – review & editing.

Funding

The author declares that no financial support was received for the research and/or publication of this article.

Acknowledgments

The author expresses his sincere gratitude to the organizers of the 2nd Africa Climate Summit (ACS2) and the African Union Commission for providing access to summit documents and policy briefs that informed this analysis. The author also acknowledge the Africa Centres for Disease Control and Prevention for fellowship support that enabled the lead author to engage in climate and health policy research.

References

- African Mineral Development Centre. Africa's green minerals strategy. (2025). Available online at: https://au.int/sites/default/files/documents/44539-doc-AGMS_Final_doc.pdf
- African Union. The second Africa climate summit opens in Addis Ababa with a call for climate investment and African-led solutions. (2025). African Union. Available online at: <https://au.int/en/pressreleases/20250909/acs2-opens-addis-ababa-call-4-climate-investment-african-led-solution>
- Cai, Y. (2025). How does climate change affect regional sustainable development? Empirical evidence from 186 countries around the world. *Int. Rev. Econ. Finance* 99:104047. doi: 10.1016/j.iref.2025.104047
- Djako, E. G., Mendy, E., Ngaryamgaye, S., Klassou, K. S., and Chenal, J. (2024). Study of the gendered impacts of climate change in Bol, Lake Province, Chad. *Climate* 12:157. doi: 10.3390/CL112100157
- England, M. I., Dougill, A. J., Stringer, L. C., Vincent, K. E., Pardoe, J., Kalaba, F. K., et al. (2018). Climate change adaptation and cross-sectoral policy coherence in southern Africa. *Reg. Environ. Chang.* 18, 2059–2071. doi: 10.1007/S10113-018-1283-0
- Moyo, E., Nhari, L. G., Moyo, P., Murewanhema, G., and Dzinamarira, T. (2023). Health effects of climate change in Africa: a call for an improved implementation of prevention measures. *Eco-Environ. Health* 2, 74–78. doi: 10.1016/J.EEHL.2023.04.004
- Ryan, S. J., Lippi, C. A., and Zermoglio, F. (2020). Shifting transmission risk for malaria in Africa with climate change: a framework for planning and intervention. *Malar. J.* 19, 1–14. doi: 10.1186/S12936-020-03224-6
- Sibiya, N. P., Das, D. K., Vogel, C., Mazinyo, S. P., Zhou, L., Kalumba, M. A., et al. (2023). Overcoming bureaucratic resistance: an analysis of barriers to climate change adaptation in South Africa. *Climate* 11:145. doi: 10.3390/CL111070145
- Wabwile, W. A. E., and Ondabu, I. T. (2025). Funding climate action: a systematic review of climate finance efficiency and impact. *J. Econ. Finan. Manag. Stud.* 8:2516–2524. doi: 10.47191/JEFMS/V8-I4-49
- Wright, C. Y., Kapwata, T., Naidoo, N., Asante, K. P., Arku, R. E., Cissé, G., et al. (2024). Climate change and human health in Africa in relation to opportunities to strengthen mitigating potential and adaptive capacity: strategies to inform an African “brains trust”. *Ann. Glob. Health* 90:7. doi: 10.5334/AOGH.4260

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author declares that Gen AI was used in the creation of this manuscript. The author(s) verify and take full responsibility for the use of generative AI in the preparation of this manuscript. Generative AI was used to support language refinement, grammar improvement, and formatting of the manuscript text. No generative AI was used for data generation, analysis, interpretation, or drawing scientific conclusions. All intellectual content, synthesis of evidence, policy analysis, and recommendations are the original work of the authors.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.