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AFRICA'S CLIMATE MITIGATION PRIORITIES: STRATEGIC PERSPECTIVES FROM THE AU ECOSOCC CLIMATE MITIGATION SUBGROUP

Abridged version

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EXECUTIVE SUMMARY

This position paper, prepared by the Mitigation Subcommittee of the AU-ECOSOCC Climate Change Working Group, sets out Africa's priorities for climate change mitigation ahead of COP30 in Belém, Brazil. The paper emphasizes Africa's unique circumstances: historically low emissions, high vulnerability, and immense potential to drive a just and equitable global transition.

Africa's mitigation challenge is urgent. Over 600 million people still lack electricity, the buildings sector is responsible for around 32% of energy-related emissions (UNEP, 2024; WorldGBC, 2022), and the AFOLU sector contributes 60–65% of continental emissions mainly from land-use change, livestock, and inefficient energy systems. Without decisive action, Africa risks locking in high-carbon, climate-vulnerable development pathways (Global ABC et al., 2020; IEA, 2022; UNEP, 2024). Yet these same sectors, energy, buildings, and AFOLU offer the most immediate, cost-effective, and socially inclusive opportunities for emissions reduction, resilience, and job creation.

This position matters now for three reasons:

1. Urgency – Climate impacts are intensifying, while finance flows to Africa remain fragmented and inequitable.
2. Opportunity – Africa's youthful population, ambitious land restoration targets, and rapid urbanization provide leverage for inclusive green growth.
3. Justice – The continent contributes least to global emissions yet faces the harshest consequences, making equity, rights, and reparatory finance non-negotiable.

Africa's core message for COP30 is clear: mitigation must be development-sensitive, community-driven, and equity-based. Energy, AFOLU, and buildings should be explicitly recognized in the Global Stocktake and NDC updates, with finance, technology, and capacity scaled to match ambition. Success requires:

- Member States: enforce climate-aligned building codes, scale decentralized renewables, and prioritize agroecology over harmful industrial models.
- African Union & RECs: harmonize standards, integrate AFOLU transformation into Agenda 2063, and strengthen regional restoration efforts.
- International partners: deliver predictable, grant-based finance directly to communities, and support technology transfer.
- Civil society & private sector: drive innovation, promote accountability, and expand community-led solutions, with youth, women, and persons with disabilities at the center.

Africa is not a testing ground; it is a decisive actor in shaping global climate outcomes. The continent's pathway to low-carbon, resilient, and inclusive development will determine whether the world meets the goals of the Paris Agreement, the SDGs, and Agenda 2063. COP30 is a defining moment to secure the just transition that Africa and the world urgently need.

ACRONYMS

AfCFTA – African Continental Free Trade Area
AfEES – Africa Energy Efficiency Strategy
AFR100 – African Forest Landscape Restoration Initiative
AFOLU – Agriculture, Forestry, and Other Land Use
AMCEN – African Ministerial Conference on the Environment
AMV – African Mining Vision
AU – African Union
AU ECOSOCC – African Union Economic, Social and Cultural Council
CBFM – Community-Based Forest Management
CSOs – Civil Society Organizations
COP30 – 30th Conference of the Parties to the UNFCCC
FAO – Food and Agriculture Organization of the United Nations
GDP – Gross Domestic Product
GHG – Greenhouse Gas
IEA – International Energy Agency
IFC – International Finance Corporation (World Bank Group)
LDN – Land Degradation Neutrality (UNCCD target of no net loss of healthy land)
MEPS – Minimum Energy Performance Standards
MRV – Monitoring, Reporting, and Verification
NCQG – New Collective Quantified Goal on Climate Finance
NDC – Nationally Determined Contributions (climate action plans submitted by Parties to the Paris Agreement)
OPDs – Organizations of Persons with Disabilities
PLWD - People living with Disabilities
RECs – Regional Economic Communities
REDD+ – Reducing Emissions from Deforestation and Forest Degradation, plus conservation, sustainable forest management, and enhancement of forest carbon stocks
SDG – Sustainable Development Goal
UNCCD – United Nations Convention to Combat Desertification
UNFCCC – United Nations Framework Convention on Climate Change
USD – United States Dollar

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1. Background and Context

Although Africa has historically contributed less than 4% of global greenhouse gas emissions, its communities remain disproportionately affected by climate change. Yet, global COP targets often fail to reflect Africa's development realities, as they prioritize fossil fuel phase-outs, emission reductions, and market-based mechanisms over equitable growth pathways.

Socioeconomic disparities, limited mitigating capacity, and restricted access to finance and technology continue to constrain Africa's transition to low-emission pathways. Global frameworks frequently overlook these contextual constraints, focusing narrowly on carbon metrics rather than sustainable and inclusive development.

In this Position Paper, mitigation is framed as Africa's strategic contribution to global emission reductions pursued through development-centered, equitable, and transformative actions aligned with Agenda 2063.

1.1 Energy Sector

Given that more than 600 million Africans lack access to electricity, fossil fuel subsidies exceed US$37 billion annually. The continent is largely dependent on fossil fuels and runs the risk of locking itself into a high-emissions energy trajectory. Africa's development trajectory depends on the capacity to implement mitigation strategies that increase access through efficiency, renewable energy, and inclusivity. It also represents a socio-economic opportunity that requires equitable, accountable, and rights-based international support.

1.2 Building and Construction Sector

This industry produces about one-third of Africa's emissions, yet most of the 2050 building stock is still to be built (IEA, 2022; GlobalABC et al., 2020; UNEP, 2024; WorldGBC, 2022). This presents a crucial choice between transitioning to sustainable pathways incorporating low-carbon design, energy efficiency, and the use of locally appropriate materials, or locking in decades of high-carbon, climate-vulnerable development (Chen & Deuskar, 2024; Makeka & Sharma, 2022; UNEP, 2024). Future-oriented urban growth can lower emissions, solve severe housing shortages, create employment, and strengthen community resilience. (IFC, 2024; OECD et al., 2025; Trisos et al., 2022).

1.3 Agriculture, Forest, and Other Land Use (AFOLU) Sector

Deforestation, unsustainable land use, and land degradation account for about 60–65% of Africa's emissions, providing the greatest potential for mitigation through improved land governance, climate-smart agriculture, forest conservation, and restoration programs. African forests hold more than 30 billion tonnes of carbon, including the Congo Basin. The sector plays a dual role as an emission source and a carbon sink.AFOLU supports rural livelihoods and underpins Africa's low-carbon development potential.

2 Problem Statement

Historical underinvestment, high vulnerability, and unequal development pathways have left Africa facing an urgent low-carbon transition challenge. Structural barriers such as land degradation, inefficient energy systems, unsustainable urbanization, and weak industrial policies continue to drive emissions growth. Weak governance, fragmented regulations, and restricted access to technology and finance further constrain Africa's ability to scale climate-smart production and clean energy deployment. Without targeted action, the continent risks locking in high-carbon infrastructure and widening development inequities.

2.1 Energy Access and Fossil Fuel Dependence

Energy poverty exacerbates socio-economic disparities, restricts access to economic and educational opportunities, and makes local communities more susceptible to climate shocks. An estimated 1 billion people on the continent cook using traditional biomass. Unsafe energy practices are reported as communities grapple to find coping solutions to their energy challenges. Reliance on charcoal and informally set up generators increases the costs of energy, health risks, and emissions. Limited access to decentralized renewable energy restricts energy access, increases costs, and unemployment. Women and girls spend time collecting firewood for cooking and heating, limiting educational and economic opportunities and reinforcing gender inequalities (Clean Cooking Alliance, 2025; Pallavi and Sonale, 2021).

2.2 Buildings and Urbanization Challenges

With 80% of Africa's building stock still unbuilt, the sector accounts for 32% of energy-related emissions (UNEP, 2024; WorldGBC, 2022). Rapid urbanization and a housing shortage of over 50 million units, expected to rise to 130 million by 2030, increase the risk of locking in high-carbon, climate-vulnerable, and inefficient buildings. Reliance on carbon-intensive materials, inconsistent standards, and weak enforcement of building codes undermines low-emission construction, while informal settlements, home to over half of urban residents, face unplanned growth on hazardous land. Communities experience high utility costs, unsafe housing, and greater exposure to extreme weather, disproportionately affecting women, children, and people with disabilities. However, Africa's rapidly urbanizing population presents a unique opportunity to pioneer green construction, creating jobs and industries based on sustainable materials, climate-smart codes, and innovative building standards. (IEA, 2022; UNEP, 2024; IFC, 2024; OECD, 2024; Trisos et al., 2022).

2.3 AFOLU and Land Use Pressures

Approximately 60–65% of Africa's emissions originate from this sector, driven by deforestation, land degradation, unsustainable agriculture, and forest conversion (IPCC, 2022; FAOSTAT, 2023). Smallholder farmers, pastoralists, Indigenous Peoples, women, and youth are among the communities most impacted, who deal with diminishing yields, forest resources, unstable land tenure, and the loss of customary means of subsistence. Large-scale monoculture and industrial livestock expansion endanger forests and carbon stocks, and the adoption of sustainable land-use practices is limited by weak governance, climate finance, and technology.

Agroecology, community-based forestry, and ecosystem restoration initiatives have demonstrated strong local results in enhancing productivity and sequestering carbon. However, fragmented donor approaches, weak institutional coordination, and limited domestic investment have kept these mitigation opportunities small-scale and underfunded. If this status quo persists, Africa will miss critical opportunities to expand its carbon sinks, reduce land-use emissions, and attract performance-based climate finance.

3. Position and Rationale

3.1 Africa's Strategic Position and Rationale

Africa calls on developed countries to honor their moral and legal obligations by providing adequate financing for a just transition and reparatory justice (African Union, 2023, 2025). The recent COP28–29 negotiations highlighted persistent underfunding of climate-vulnerable regions, deadlocks on the New Collective Quantified Goal (NCQG), and challenges in applying intergenerational justice (UNFCCC, 2023; 2024).

Africa's strategic position recognizes that renewable energy, AFOLU, and buildings represent the most significant and cost-effective mitigation pathways. Expanding off-grid solar and mini-grid systems can create employment, reduce emissions, and increase energy access, whilst fostering meaningful youth and women participation in entrepreneurial and technological innovation.

3.2 Energy Sector

Africa's mitigation priority in energy is to leapfrog into a renewable-powered future, capitalizing on abundant solar, wind, hydro, and critical mineral reserves to expand energy access and drive green industrialization. Affordable clean energy is central to Africa's mitigation strategy, as high energy costs have been shown to constrain innovation and firm growth in Sub-Saharan Africa (Hussain et al., 2022). Tanzania generates over 77% of electricity from fossil fuels, while non-hydro renewables remain under 10% in most countries (PwC, 2024; IEA, 2024). Critics argue that transitioning to renewables or enforcing strict building standards may raise costs and slow development, but global experiences show these measures are technically feasible and economically viable when phased appropriately. To ensure sustainability, mineral extraction and battery production must follow low-carbon and socially inclusive processes.

3.3 AFOLU Sector

The AFOLU sector presents opportunities for large-scale, cost-effective mitigation through sustainable agriculture, forestry, and land restoration. The success of initiatives such as the REDD+ and AFR100 depends on the participation of youth and women to scale climate-smart agriculture and restoration equitably. Moreso, Africa's forests, savannahs, and mangroves make the continent the world's largest carbon sink after the Amazon. Therefore, scaling initiatives such as the Great Green Wall and AFR100 must be central to global mitigation commitments.

3.4 The Building and Construction Sector

Africa's rapidly expanding building stock requires climate-aligned urban planning, including Minimum Energy Performance Standards (MEPS), embodied carbon limits, and passive design strategies (Campos & Sakoda, 2023; Reddy et al., 2024; UNEP, 2024). Digital and AI-driven technologies can enhance labour productivity and innovation in Africa's construction sector, enabling green building transitions at scale (Tingbani et al., 2024). Transforming material supply chains and scaling sustainable local alternatives is equally critical, linking mitigation with industrial development and job creation (GlobalABC et al., 2020; Makeka & Sharma, 2022). Rwanda's Green Building Minimum Compliance System illustrates the feasibility of phased standards that balance efficiency, equity, and resilience in African contexts (World Bank, 2023). Crucially, investments in building efficiency deliver multiple dividends: lower household utility costs, reduced public spending on disaster recovery, improved health outcomes, and stronger resilience for vulnerable populations (Dwaikat & Ali, 2018; Hallegatte et al., 2019; OECD, 2024).

Africa's civil society position is guided by the following core principles:

- Equity and justice: ensuring women, youth, Indigenous peoples and local communities, and persons with disabilities benefit from mitigation measures.
- Inclusiveness: guaranteeing meaningful participation of communities in design, implementation, and decision-making.
- Sustainability: implementing technically feasible, economically viable, socially acceptable, and environmentally resilient solutions.
- Community-centered approaches: leveraging local knowledge and stewardship across energy, AFOLU, and buildings.
- Finance alignment: prioritizing grant-based or concessional funding to ensure equitable access and avoid debt traps.

These principles underpin Africa's strategic approach by ensuring that mitigation interventions are both technically effective and socially just.

This strategic rationale is anchored in global and regional legal frameworks (UNFCCC, Sustainable Development Goals, Paris Agreement, Koronivia Joint Work on Agriculture, UNCCD, AU Agenda 2063, and AMCEN), and is supported by evidence from African case studies demonstrating both feasibility and strong socio-economic returns. Africa's COP30 position emphasizes that climate mitigation strategies must prioritize equity, inclusiveness, and community empowerment.

4. Recommendations and Implementation Considerations

Africa must take three red lines to COP30: (1) recognition of Africa's energy, AFOLU, and building sectors as global mitigation priorities; (2) dedicated finance windows for African mitigation under the NCQG; and (3) binding commitments on technology transfer and just transition support.

The following recommendations outline specific roles and actions for Member States, the African Union, and Regional Economic Communities, international partners, and civil society/private sector actors.

4.1 Member States

4.1.1 Energy

Invest in indigenous R&D, build domestic value chains for renewable energy technologies (e.g., batteries, solar panels), and progressively phase out fossil fuels while scaling up renewables and efficiency in line with AfEES and Mission 300.

4.1.2 AFOLU

- Institutionalize youth, women, and community representation in NDC planning.
- Establish national windows for climate finance targeting youth-led AFOLU initiatives.
- Enforce land restoration commitments such as AFR100.
- Reject harmful industrial animal farming models (e.g., JBS expansion in Nigeria) that drive deforestation and undermine local livelihoods.
- Prioritize agroecology, regenerative agriculture, and community-based farming as central mitigation pathways.
- Ensure Loss and Damage support addresses rural realities, farmers, pastoralists, and Indigenous Peoples who face disproportionate climate impacts

4.1.3 Buildings

- Adopt and enforce modern, climate-aligned building codes, and use planning and permitting tools to privilege climate-aligned construction over conventional approaches.
- Establish retrofit programs for social housing and public assets such as schools and health facilities, using performance-based subsidies and concessional loans.
- Create incentive frameworks, e.g., tax breaks, concessional finance, and procurement preferences to promote sustainable local materials production, support energy-efficient upgrades and retrofits.

4.1.4 Implementation considerations

Weak enforcement and funding constraints can be mitigated through digital permitting, inspector training, blended finance models, and public–private partnerships.

4.2 African Union and Regional Economic Communities (RECs)

4.2.1 Energy

- Harmonize policies on energy access and efficiency.
- Coordinate regional power trade under AfCFTA.

- Create continental safeguards to prevent extractive activities from threatening carbon-rich ecosystems.

4.2.2 AFOLU

- Embed AFOLU transformation into AU frameworks (Agenda 2063, African Climate Change & Resilient Development Strategy), ensuring youth inclusion is operationalized in AU-level dialogues and monitoring.
- Strengthen forest and ecosystem restoration efforts such as AFR100 and the Great Green Wall through AU and REC coordination.

4.2.3 Buildings

- Harmonize regional standards for green products and building codes
- Coordinate public procurement of sustainable materials
- Integrate the buildings sector explicitly into AU climate frameworks and Agenda 2063 urbanization priorities.

4.2.4 Implementation considerations

Uneven national capacities can be mitigated via regional training hubs, pooled procurement for green products, and phased harmonization.

4.3 International Partners

4.3.1 Energy

- Support Africa to access international finance through the GCF, GEF, and Article 6 carbon markets, with emphasis on concessional finance and risk-sharing facilities for decentralized renewables and energy efficiency.
- Provide targeted grant investments for women-owned enterprises and companies employing gender-informed business models that address energy gaps.

4.3.2 AFOLU

- Establish dedicated youth windows in global climate finance mechanisms; prioritize Indigenous Peoples and local communities in REDD+ and land restoration finance; and embed AFOLU in the New Collective Quantified Goal.
- Ensure AFOLU finance is grant-based, predictable, and flows directly to smallholders, forest stewards, and grassroots communities, not trapped in bureaucracies.
- Create dedicated funding windows for Organizations of Persons with Disabilities (OPDs) and require reporting on disability inclusion in climate finance.

4.3.3 Buildings

- Scale concessional finance and guarantees for resilient buildings and affordable housing, including funding for demonstration pilots to de-risk investment.
- Expand Article 6 methodologies to buildings, and support technology transfer for low-carbon materials.

4.3.4 Implementation considerations

High-risk perceptions can be mitigated through credit enhancements, demonstration projects, and twinning programs linking African and international municipalities.

4.4 Civil Society and the Private Sector

4.4.1 Energy

- Drive scalable innovations such as pay-as-you-go solar, mobile energy payments, and decentralized microgrids.
- Prioritize just transition for workers and communities.
- Advocate for donor funding models that reward collaboration and coalition-building across borders and discourage competition and duplication.

4.4.2 AFOLU

- Expand enterprises that are community and youth-led in climate-smart forestry, ecosystem restoration, and agriculture, and monitor government accountability on youth engagement.
- Promote agroecology and regenerative farming while opposing industrial livestock expansion that undermines sustainable land use.
- Advocate to ensure the Loss and Damage Fund prioritizes rural and vulnerable communities.

4.4.3 Buildings

- Champion voluntary green certification, integrate sustainability into ESG reporting, and demonstrate market value through pilot projects.
- Raise public awareness on the benefits of climate-resilient housing and efficient building practices."
- Develop affordable housing models that combine low-carbon design with accessibility for vulnerable groups.
- Advocate to ensure the Loss and Damage Fund includes resilient housing and community infrastructure as eligible priorities."

4.4.4 Implementation considerations

Awareness gaps and trust deficits can be overcome through transparent data, community co-design, and alignment with AU youth and gender charters.

4.5 Looking Ahead to COP-30

Energy, AFOLU, and Buildings are cornerstones of Africa's climate transition, and its growing youthful population, ambitious land restoration targets, and growing urban landscapes present unparalleled opportunities to advance low-carbon, resilient, and inclusive development. Inclusivity must intentionally include persons with disabilities, backed by dedicated funding for OPDs and accountability mechanisms.

At COP-30, Africa should call for:

- Set up a dedicated global financing and market-access system or mechanisms across the three priority sectors
- Recognition of these three sectors in Global Stocktake (GST) outcomes and updated NDCs.
- Scaled finance and technology transfer for youth-led initiatives across the three sectors.
- Explicit integration into just transitions and climate justice agendas, ensuring informal settlements, smallholder farmers, women, persons living with disabilities, and youth are central beneficiaries.
- A financing window for resilient and affordable housing, expanded Article 6 methodologies and de-risking facilities for decentralized renewable energy, and predictable grant-based flows for community-led AFOLU initiatives.

5. Conclusion

Africa's climate mitigation priorities, energy, AFOLU, and buildings are not only African priorities but global ones. Delivering them requires justice-driven finance, technology transfer, and recognition of Africa's leadership within the Paris Agreement and Agenda 2063

This requires scaling finance, harmonizing policies, and embedding resilience into every sector, while institutionalizing the leadership of youth and women, whose innovation and demographic weight are decisive for success.

REFERENCES

- African Union (2023). African Climate Change and Resilient Development Strategy and Action Plan (2022–2032). Addis Ababa: African Union Commission.
- African Union (2025). AU Common Position on Climate Change for COP30 (Draft). Addis Ababa: AU Commission.
- "Blomley, T., Pfliegner, K., Isango, J., Zahabu, E., Ahrends, A., & Burgess, N. (2008)." ("Seeing the wood for the trees: An... preview & related info | Mendeley") Seeing the wood for the trees: An assessment of the impact of Tanzania's participatory forest management. Oryx, 42(3), 380–391.
- Choudhuri P, Desai S.2021. Lack of access to clean fuel and piped water and children's educational outcomes in rural India. World Dev. 2021, 145
- Clean Cooking Alliance 2025 Gender and Clean Cooking, https://cleancooking.org/wp-content/uploads/2021/07/CCA-gender-sheet-ENGLISH.pdf
- FAO (2023). State of Food and Agriculture 2023: Reimagining agrifood systems. Rome: Food and Agriculture Organization of the United Nations.
- Hussain, J., Karimu, A., Salia, S., & Owen, R. (2022). Does the cost of energy matter for innovation? The effects of energy prices on SME innovation in Sub-Saharan Africa. *International Journal of Entrepreneurial Behavior & Research*, *28*(2), 548-566.
- IEA (2022). Africa Energy Outlook 2022. Paris: International Energy Agency.
- IEA (2024). World Energy Outlook 2024. Paris: International Energy Agency.
- PwC (2024). Africa Energy Review 2024. London: PricewaterhouseCoopers.
- REN21 (2023). Renewables 2023 Global Status Report. Paris: REN21 Secretariat.

- UNFCCC (2023). Report of the Conference of the Parties at its Twenty-Eighth Session (COP28). Bonn: UNFCCC Secretariat.
- UNFCCC (2024). Report of the Conference of the Parties at its Twenty-Ninth Session (COP29). Bonn: UNFCCC Secretariat.
- World Bank (2023). Accelerating Climate-Resilient and Low-Carbon Development in Africa. Washington, DC: World Bank Group
- World Green Building Council. (2022, November 4). World Green Building Council calls for urgent action towards sustainable cities and built environments in Africa. ("World Green Building Council calls for urgent action towards ...") *News and Thought Leadership.* https://worldgbc.org/article/worldgbc-calls-for-urgent-action-africa/
- United Nations Environment Program. (2024). *Global status report for buildings and construction: Beyond foundations: Mainstreaming sustainable solutions to cut emissions from the buildings sector*. Nairobi: United Nations Environment Program and Global Alliance for Buildings and Construction. https://doi.org/10.59117/20.500.11822/45095
- International Energy Agency. (2022). *Africa Energy Outlook 2022*. Paris: International Energy Agency. https://www.iea.org/reports/africa-energy-outlook-2022
- Global Alliance for Buildings and Construction, International Energy Agency, & United Nations Environment Program. (2020). *GlobalABC Regional Roadmap for Buildings and Construction in Africa 2020-2050: Towards a zero-emission, efficient, and resilient buildings and construction sector*. Paris: International Energy Agency. https://iea.blob.core.windows.net/assets/d60403aa-6fae-4365-bcd5-8af5daf22193/GlobalABC_Roadmap_for_Buildings_and_Construction_in_Africa_2020-2050.pdf
- Makeka, M., & Sharma, M. (2022). *African timber cities: Carbon sinks with development benefits?* London: International Institute for Environment and Development (IIED). https://www.iied.org/20871iied
- Chen, T., & Deuskar, C. (2024). *Embodied carbon emissions (City Climate Finance Gap Fund Technical Note)*. Washington, DC: World Bank Group. http://hdl.handle.net/10986/43086
- International Finance Corporation (IFC). (2024). *IFC scaling housing finance in Africa*. https://www.ifc.org/content/dam/ifc/doc/2024/scaling-housing-finance-in-africa-factsheet.pdf
- Organisation for Economic Co-operation & Development, African Development Bank, UNOPS-Cities Alliance, and United Cities & Local Governments of Africa. (2025). *Africa's urbanization dynamics 2025: Planning for urban expansion* (West African Studies). Paris: OECD Publishing. https://doi.org/10.1787/2a47845c-en
- Tingbani, I., Salia, S., Hartwell, C. A., & Yahaya, A. (2025). Looking in the rear-view mirror: Evidence from artificial intelligence investment, labour market conditions and firm growth. *International Journal of Finance & Economics*, *30*(1), 961-982.
- Trisos, C. H., Adelekan, I. O., Totin, E., Ayanlade, A., Efitre, J., Gemeda, A., Kalaba, K., Lennard, C., Masao, C., Mgaya, Y., Ngaruiya, G., Olago, D., Simpson, N. P., & Zakieldeen, S. (2022). Africa. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1285–1455). Cambridge, UK and New York, NY, USA: Cambridge University Press. ("(PDF) Changes in climate extremes and their impacts on the natural ...") https://doi.org/10.1017/9781009325844.011
- Organisation for Economic Co-operation and Development. (2024). *Infrastructure for a climate-resilient future*. Paris: OECD Publishing. https://doi.org/10.1787/a74a45b0-en

- Campos Garcia, A., & Sakoda, K. (2023). *"Building regulations in Sub-Saharan Africa: A status review of the building regulatory environment*." ("A Reform Roadmap for Resilient Built Environments | GFDRR") Washington, DC: World Bank Group. http://documents.worldbank.org/curated/en/099052523132014390
- World Bank. (2025). Population living in slums (% of urban population). *Data*. https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS
- Zachariah, M., Barnes, C., Wainwright, C., Balogun, R. A., Vondou, D. A., Adefisan, E. A., … Otto, F. E. (2022). *Climate change exacerbated heavy rainfall, leading to large-scale flooding in highly vulnerable communities in West Africa*. World Weather Attribution. https://www.worldweatherattribution.org/wp-content/uploads/Nigeriafloods_scientific-report.pdf
- World Meteorological Organization. (2023). *State of the climate in Africa 2022* (WMO-No. 1330). Geneva: World Meteorological Organization. https://library.wmo.int/viewer/67761/download?file=1330_State-of-the-Climate-in-Africa-2022_en.pdf&type=pdf&navigator=1
- Partnership for Energy Efficiency in Buildings. (2023, October). *Buildings in the NDCs: Mapping targets on buildings in the nationally determined contributions (NDCs) (PEEB Working Paper).* ("BUILDINGS IN THE NDCS - peeb.build") https://peeb.build/wp-content/uploads/2024/12/PEEB_Report_Buildings-in-the-NDCs.pdf
- Reddy, S., Sarraf, S., & Kapoor, R. (2024). *NDCs for buildings: Ambitious, investable, actionable, and inclusive guidance for policymakers and practitioners in the 2025 NDC revision*. ("NDCs for Buildings") https://globalabc.org/resources/publications/ndcs-buildings-ambitious-investable-actionable-and-inclusive
- Hallegatte, S., Rentschler, J., & Rozenberg, J. (2019). *Lifelines: The resilient infrastructure opportunity*. Washington, DC: World Bank.
- Dwaikat, L. N., & Ali, K. N. (2018). The economic benefits of a green building: Evidence from Malaysia. ("The economic benefits of a green building: evidence from Malaysia") *Journal of Building Engineering, 18*, 448–453. https://staff-beta.najah.edu/media/published_research/2018/04/27/The_economic_Benefits_of_a_green_building_-_Evidence_from_Malaysia.pdf