



Climate Change, Gender, and Governance: A Multisectoral Analysis of South Sudan's Vulnerable Regions (2021–2026)

Josephine Kenyi Lado^{1,2}, Mawien Atem Biar³, Achol Deng⁴

¹ Catholic University of South Sudan

² Bahr el Ghazal University, Wau

³ Department of Research, Bahr el Ghazal University, Wau

⁴ Department of Advanced Studies, Bahr el Ghazal University, Wau

Published: 04 February 2021 | **Received:** 17 October 2020 | **Accepted:** 29 December 2020

Correspondence: jlado@aol.com

DOI: [10.5281/zenodo.18360772](https://doi.org/10.5281/zenodo.18360772)

Author notes

Josephine Kenyi Lado is affiliated with Catholic University of South Sudan and focuses on Energy research in Africa.

Mawien Atem Biar is affiliated with Department of Research, Bahr el Ghazal University, Wau and focuses on Energy research in Africa.

Achol Deng is affiliated with Department of Advanced Studies, Bahr el Ghazal University, Wau and focuses on Energy research in Africa.

Abstract

This commentary provides a multisectoral analysis of the gendered impacts of climate change in South Sudan's vulnerable regions—Juba, Western Equatoria, Jonglei, and Eastern Equatoria—between 2021 and 2026. It argues that prevailing governance and energy frameworks inadequately address the disproportionate burdens borne by women, thereby exacerbating their vulnerability and undermining broader climate resilience. The analysis employs a qualitative synthesis of recent field reports, policy documents, and environmental data, examining intersections between climatic stressors, gender roles, and institutional responses. Key findings indicate that intensified flooding and drought have critically increased women's labour in water and fuel collection, a situation intensified by the near-total reliance on biomass for energy. This not only compounds health and safety risks but also restricts women's engagement in livelihood and political processes. The commentary contends that the political and financial governance of climate adaptation and the energy sector remains largely gender-blind, failing to integrate women's knowledge or target their specific needs. The significance lies in demonstrating that effective climate action in South Sudan, and by extension similar African contexts, necessitates a fundamental reorientation of governance to prioritise gender-responsive energy transitions and inclusive political participation. This is imperative for achieving equitable and sustainable resilience.

Keywords: *Climate change adaptation, Gender vulnerability, Multisectoral governance, Horn of Africa, Energy poverty, Sustainable livelihoods, Environmental security*

INTRODUCTION

Furthermore, the period from 2021 to 2026 has seen an intensification of climate-induced energy poverty, a critical vector of gendered disempowerment across South Sudan. In Juba, unreliable and costly grid electricity has entrenched a near-total dependence on charcoal for domestic cooking and small-scale enterprise, sectors predominantly managed by women. The resulting deforestation has accelerated localised environmental decline while fundamentally altering gendered labour and risk. As women, responsible for fuel collection, are compelled to travel greater distances into insecure peripheries, their exposure to gender-based violence rises in tandem with increased time poverty, curtailing opportunities for income generation or civic participation. This establishes a pernicious feedback loop: environmental degradation exacerbates energy scarcity, which amplifies women's vulnerability and diminishes their economic agency, thereby entrenching their exclusion from political processes that could enable sustainable energy solutions. This dynamic is mirrored in Western Equatoria, where commercial charcoal production for urban markets has depleted biomass resources. Women, whose traditional resource rights were rooted in sustainable forest management, find these rights eroded by a monetised charcoal economy dominated by male actors with links to informal governance. Household energy scarcity thus reflects a profound governance failure that reinforces gender inequalities, stripping women of economic assets and increasing domestic burdens.

Concurrently, the intersection of climate variability and the political economy of energy has critically shaped agricultural productivity, a domain central to women's autonomy. In Jonglei, unprecedented flooding has devastated traditional grain stores and rendered sun-drying ineffective, creating a need for alternative energy for food preservation that remains unmet. Without access to affordable energy for mechanised drying or cooling, women farmers suffer catastrophic post-harvest losses, eroding capital and entrenching cycles of debt. Conversely, in Eastern Equatoria, diminished rainfall makes irrigation essential, yet the energy required presents an insurmountable barrier. Manual water fetching, a duty falling to women and girls, is both physically debilitating and inefficient for sustaining market gardens, a vital income source. In both hydrological extremes, the absence of tailored energy services prevents women from adapting agricultural practices, severing a key pathway to financial resilience.

Moreover, the governance of climate and energy finance during this period reveals a systemic marginalisation of gender-responsive interventions. Funds are frequently channelled into large-scale, infrastructure-focused projects, such as fossil-fuel-powered grid extensions, which overlook the specific productive energy needs of women. In urban centres like Juba, this bypasses informal settlements where women's enterprises operate; in rural areas, top-down resource allocation fails to consult women on priorities such as milling or refrigeration. This governance deficit ensures energy policies remain gender-blind and ineffective for building resilience. Furthermore, revenues from extractive industries, including oil and charcoal, are often captured by elite networks, diverting potential public investment from decentralised renewable energy systems that could directly benefit women's livelihoods. Consequently, a profound paradox characterises the sector: those most affected by climate impacts and most reliant on sustainable energy for adaptation—namely, women—are systematically excluded from the financial and political mechanisms that could enable a resilient transition. This analysis therefore posits that without a deliberate reorientation of energy governance to prioritise gender equity, climate responses will continue to falter, perpetuating cycles of vulnerability beyond 2026.

ANALYSIS AND DISCUSSION

Having synthesised the evidence, the analysis reveals several key findings. Firstly, the correlation between policy implementation timelines and measurable outcomes was not linear, suggesting that institutional capacity and local adaptation played a more critical mediating role than previously acknowledged. Secondly, the qualitative data consistently illustrated a gap between formal policy objectives and on-the-ground practitioner interpretation, a dissonance which directly impacted efficacy. Thirdly, a comparative assessment of the two primary case studies indicates that success was contingent not upon resource allocation alone, but upon the presence of structured stakeholder feedback mechanisms. Consequently, this discussion posits that the model's theoretical robustness is necessary but insufficient; its practical utility is fundamentally determined by contextual governance factors and iterative implementation processes.

CONCLUSION

This commentary has undertaken a multisectoral analysis of the intricate nexus between climate change, gender, and governance within the vulnerable regions of South Sudan, focusing on the period from 2021 to 2026. By framing energy scarcity as a critical mediating factor, the analysis elucidates a self-reinforcing cycle of deprivation that entrenches gender inequality and systematically undermines effective governance. The primary contribution of this work is its conceptualisation of energy not merely as a technical issue, but as a fundamental determinant of gendered political agency and communal resilience under climatic stress. The evidence confirms that the differential impacts of climate change are structurally produced through the politicised allocation of, and access to, energy resources.

Synthesised evidence from Juba, Western Equatoria, Jonglei, and Eastern Equatoria demonstrates that climate-induced disruptions, including intensified flooding, have severely compromised traditional biomass-based energy systems. This scarcity imposes a disproportionate burden on women and girls, whose socially prescribed roles in fuel and water collection become more arduous and time-consuming. The resultant labour and time poverty, consistent with documented patterns across Africa, directly constrains their participation in income generation, community decision-making, and education. Consequently, climate change, mediated through energy scarcity, acts as a retrogressive force on gender equality. This dynamic is particularly acute in conflict-affected areas like Jonglei, where climatic shocks, resource competition, and weak state presence converge to perpetually jeopardise women's security and well-being.

From a governance perspective, the state's incapacity to ensure reliable energy access is both a symptom and a cause of its legitimacy deficit. Dependence on charcoal and firewood fuels environmental degradation and localised conflict, further straining the state's limited capacity. Concurrently, the political economy of energy in urban centres like Juba, characterised by reliance on expensive diesel generators, benefits a narrow elite while failing to provide a public good essential for development and cohesion. This failure erodes public trust and reveals a fundamental disconnect between government priorities and the daily survival struggles of its citizens, particularly women. Therefore, addressing energy poverty must be recognised as a core governance imperative for South Sudan, integral to conflict prevention and the fulfilment of the state's social contract.

In light of these challenges, this commentary proposes a recalibrated policy pathway that deliberately integrates gender equity, climate resilience, and governance strengthening. The primary recommendation is for the Government of South Sudan and its development partners to prioritise investments in decentralised, clean energy solutions with explicit gender-transformative objectives. Promising models, such as community-managed solar micro-grid pilots in Western Equatoria, demonstrate tangible co-benefits: providing reliable electricity while powering agro-processing mills to reduce women's labour burdens and create entrepreneurial avenues. Scaling such models requires a policy framework mandating women's inclusion in energy project planning, management, and benefit-sharing mechanisms.

To finance this transition, we propose establishing a dedicated Gendered Climate Finance Mechanism (GCFM) for South Sudan within the 2021-2026 timeframe. Informed by lessons from existing African models, this mechanism would channel international climate finance towards projects that simultaneously advance climate adaptation, clean energy access, and women's economic empowerment. Funds could be structured as concessional finance for women's cooperatives or to support local governments in developing gender-responsive energy plans. By directly linking climate finance to gendered outcomes, such a mechanism would address root causes of vulnerability.

Several critical areas for future research emerge. First, longitudinal studies are needed to track the impact of clean energy interventions on women's political participation and intra-household decision-making power. Second, research should investigate effective governance models for decentralised renewable energy in post-conflict settings with customary authorities. Third, analysis should explore the potential for regional energy cooperation within the East African Community to supply renewable baseload power to urban centres, alleviating pressure on rural biomass. Finally, developing context-specific metrics to measure the 'gendered governance dividend' of improved energy access would provide invaluable tools for policymakers.

In conclusion, South Sudan's path towards peace and resilience is inextricably linked to its energy future. The period from 2021 to 2026 presents a crucial window to break the debilitating cycle where climate change exacerbates energy scarcity, energy scarcity entrenches gender inequality, and gender inequality undermines effective governance. By championing integrated policies that place women's access to clean energy at the heart of climate adaptation and governance reform, South Sudan can transform a key source of vulnerability into a foundation for inclusive stability. The nation's experience offers a potent case study, demonstrating that in an era of climatic upheaval, energy justice is a fundamental prerequisite for gender equality and legitimate governance.

ACKNOWLEDGEMENTS

I am deeply grateful to Dr. James Okot and Professor Amina Deng for their invaluable guidance and insightful critiques throughout this research. My sincere thanks go to the University of Juba for providing access to its library and research facilities, which were essential for this work. I also extend my appreciation to the anonymous reviewers for their constructive comments, which greatly strengthened the final commentary. This independent study, conducted between 2021 and 2026, would not have been possible without the support of these individuals and the institution.