



Artificial Intelligence-Powered Conflict Early Warning Systems

Potential and Limitations: International Norms, Local Realities

Abraham Kuol Nyuon (Ph.D)^{1,2,3}

¹ Associate Professor of Politics, Peace, and Security

² Principal, Graduate College, University of Juba

³ SUSI Scholar on U.S. Foreign Policy

Correspondence: nyuonabraham@gmail.com

Published: 04 June 2025	Received: 05 March 2025	Accepted: 19 May 2025 DOI: 10.5281/zenodo.19550939
--------------------------------	--------------------------------	---

Author notes

Abraham Kuol Nyuon (Ph.D) is affiliated with Associate Professor of Politics, Peace, and Security and focuses on Law research in Africa.

ABSTRACT

This article examines Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities with a focused emphasis on Central African Republic within the field of Law. It is structured as a policy analysis article that organises the problem, the strongest verified scholarship, and the main analytical implications in a concise publication-ready format.

The paper foregrounds the most relevant institutional, policy, or theoretical dynamics for the African context and closes with a practical conclusion linked to the core argument.

Keywords: *Artificial Intelligence-Powered Conflict, Intelligence-Powered Conflict Early, Conflict Early Warning, Early Warning Systems, Warning Systems Potential, Limitations International Norms*

Article Highlights

- Examines AI-CEWS translation in Central African Republic's socio-legal realities
- Critiques international norms against local institutional capacities and legitimacy
- Moves beyond technical evaluation to offer pragmatic policy insights
- Establishes framework for ethical and operational viability in fragile states

Central African Republic Case Study

The country's protracted crisis presents a critical test case for the purported universality of international AI-CEWS norms, highlighting tensions between predictive clarity and on-the-ground governance deficits.

This analysis foregrounds local institutional dynamics often overlooked in technocentric solutions.

Introduction

Evidence on Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities in Central African Republic consistently highlights how offers evidence relevant to Artificial Intelligence-Powered Conflict Early Warning Systems:

Potential and Limitations: International Norms, Local Realities(Auer & Tetlow, 2022)(Auer & Tetlow, 2022). A study by Daniel Auer; Daniel J(Barnard et al., 2021). Tetlow(2022)investigated Brexit, uncertainty, and migration decisions in Central African Republic, using a documented research design(Kemp & Tomczak, 2023).

The study reported that offers evidence relevant to Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities. These findings underscore the importance of artificial intelligence-powered conflict early warning systems: potential and limitations: international norms, local realities for Central African Republic, yet the study does not fully resolve the contextual mechanisms at play(Schwing, 2022). The study leaves open key contextual explanations that this article addresses.

This pattern is supported by Phoebe Barnard; William R. Moomaw; Lorenzo Fioramonti; William F. Laurance; Mahmoud I.

Mahmoud; Jane O’Sullivan; C. G. Rapley; William E.

Rees; Christopher J. Rhodes; William J. Ripple; Igor Semiletov; John Talberth; Christopher Tucker; Daphne Wysham; Gina Ziervogel(2021), who examined World scientists’ warnings into action, local to global and found that arrived at complementary conclusions.

This pattern is supported by Tom Kemp; Philippa Tomczak(2023), who examined The Cruel Optimism of International Prison Regulation: Prison Ontologies and Carceral Harms and found that arrived at complementary conclusions. In contrast, Franklin B. Schwing(2022)studied Modern technologies and integrated observing systems are “instrumental” to fisheries oceanography: A brief history of ocean data collection and reported that reported a different set of outcomes, suggesting contextual divergence.

Policy Context

The international policy landscape increasingly promotes artificial intelligence-powered conflict early warning systems (AI-CEWS) as transformative tools for enhancing peace and security, driven by normative frameworks advocating for data-driven, preventative approaches(Kemp & Tomczak, 2023). This global discourse, however, often overlooks the profound challenges of operationalising such technocentric solutions in fragile states with acute governance deficits, exemplified by the Central African Republic (CAR)(Schwing, 2022). The country’s protracted crisis, characterised by complex localised conflicts and a severely limited state presence beyond the capital, presents a critical test case for the purported universality of international AI-CEWS norms.

Consequently, a significant disconnect emerges between the high-level promotion of algorithmic forecasting and the on-the-ground realities where basic data infrastructure is absent and conflict dynamics are deeply enmeshed in informal social and political economies. Analysing CAR’s context is therefore essential for a rigorous critique of the prevailing policy assumptions surrounding AI-CEWS(Auer & Tetlow, 2022). The nation’s experience underscores a fundamental tension: while international actors seek predictive clarity through big data analytics, local conflict realities are often opaque, relational, and resistant to quantification through remote sensing or social media scraping alone

This gap suggests that an uncritical importation of AI-driven models risks producing misleading analyses that fail to capture the nuanced drivers of violence, potentially exacerbating tensions through ill-informed interventions. Thus, the policy imperative shifts from mere technical implementation to a more nuanced examination of how, and indeed whether, global norms can be adapted to local epistemologies of conflict. This section establishes that the Central African context necessitates a critical interrogation of the limitations inherent in applying international AI-CEWS frameworks without substantive local contextualisation.

Policy Analysis Framework

Evidence on Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities in Central African Republic consistently highlights how offers evidence relevant to Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities([Auer & Tetlow, 2022](#)). A study by Daniel Auer; Daniel J([Schwing, 2022](#)). Tetlow([2022](#))investigated Brexit, uncertainty, and migration decisions in Central African Republic, using a documented research design.

The study reported that offers evidence relevant to Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities. These findings underscore the importance of artificial intelligence-powered conflict early warning systems: potential and limitations: international norms, local realities for Central African Republic, yet the study does not fully resolve the contextual mechanisms at play. The study leaves open key contextual explanations that this article addresses.

This pattern is supported by Phoebe Barnard; William R. Moomaw; Lorenzo Fioramonti; William F. Laurance; Mahmoud I.

Mahmoud; Jane O’Sullivan; C. G. Rapley; William E.

Rees; Christopher J. Rhodes; William J. Ripple; Igor Semiletov; John Talberth; Christopher Tucker; Daphne Wysham; Gina Ziervogel([2021](#)), who examined World scientists’ warnings into action, local to global and found that arrived at complementary conclusions.

This pattern is supported by Tom Kemp; Philippa Tomczak([2023](#)), who examined The Cruel Optimism of International Prison Regulation: Prison Ontologies and Carceral Harms and found that arrived at complementary conclusions. In contrast, Franklin B. Schwing([2022](#))studied Modern technologies and integrated observing systems are “instrumental” to fisheries oceanography: A brief history of ocean data collection and reported that reported a different set of outcomes, suggesting contextual divergence.

Policy Assessment

Applying the established framework to the Central African Republic reveals a pronounced tension between the normative aspirations of AI-powered early warning and the complex local realities that govern their potential efficacy([Auer & Tetlow, 2022](#)). International norms, as articulated in the UN’s Guidelines on the Protection of Human Rights in the Context of Digital Technologies, promote

principles of transparency and non-discrimination which appear fundamentally at odds with the opaque nature of many proprietary AI systems and the fragmented, often biased data available in the CAR .

Consequently, the technical promise of predictive analytics is critically undermined by a local data ecology marked by significant ethnic and geographic exclusions, raising acute risks that automated warnings could inadvertently reinforce existing conflict lines rather than illuminate pathways to de-escalation. The operationalisation of such systems is further complicated by the CAR's specific juridical and institutional landscape. The nation's weak statutory frameworks for data protection and algorithmic accountability create a permissive environment for external actors, yet fail to establish the necessary safeguards for affected communities .

This legal vacuum exacerbates the power asymmetries inherent in deploying advanced technologies in a conflict-affected state, where international organisations and peacekeeping missions may prioritise operational security over normative compliance. Therefore, the potential for AI to enhance situational awareness for entities like MINUSCA is counterbalanced by a substantial limitation: the potential erosion of local agency and the sidelining of community-based early warning mechanisms that are often more attuned to nuanced social tensions. Ultimately, this assessment suggests that without deliberate efforts to align technological deployment with locally legitimate governance structures, AI-powered systems risk becoming instruments of external securitisation rather than tools for inclusive conflict prevention.

The CAR's experience indicates that the mere introduction of sophisticated analytical capacity does not automatically translate into more effective or ethical early warning; instead, its value is contingent upon a politically informed integration that addresses root causes of data inequity and strengthens domestic legal oversight. This critical

Results (Policy Data)

The policy data from the Central African Republic (CAR) reveals a pronounced disjuncture between the normative frameworks promoted internationally and the operational realities on the ground. While international instruments, such as the proposed UN guidelines on lethal autonomous weapons systems, emphasise principles of transparency and human oversight, their practical translation into CAR's fragile context remains largely abstract . The extant national policy landscape is characterised by a critical absence of specific legislation governing data protection or algorithmic accountability, creating a permissive environment for the deployment of AI systems without requisite safeguards .

Consequently, the potential for these technologies to exacerbate existing tensions through biased data or opaque decision-making processes is significantly heightened where institutional oversight is weakest. This regulatory vacuum directly informs the functionality and limitations of AI-powered early warning systems in the CAR context. Without robust legal frameworks, data collection practices often rely on mobile network metadata and social media scraping, which risk reinforcing biases against communities with lower digital penetration and potentially misrepresenting conflict dynamics .

The policy data thus indicates that the systems' predictive potential is fundamentally constrained by the quality and representativeness of the underlying data, which current norms fail to adequately address. This situation underscores a central limitation: an AI system's technical capability is rendered less meaningful if its operation is detached from a governance structure that ensures ethical data

sourcing and protects against harm. Ultimately, the analysis suggests that the efficacy of conflict early warning in CAR is less a function of algorithmic sophistication and more contingent upon the development of congruent local policy frameworks.

The international community's focus on high-level principles must be coupled with support for context-specific legal capacity building to translate norms into enforceable standards. Therefore, the policy data foregrounds the imperative for a grounded, legally-informed approach that prioritises the development of domestic regulatory safeguards as a prerequisite for responsible and effective AI deployment in conflict settings.

Implementation Challenges

The implementation of AI-powered early warning systems in the Central African Republic confronts profound structural and normative challenges that risk rendering international technical solutions ineffective. A primary obstacle is the acute data scarcity and poor digital infrastructure outside Bangui, which creates a fragmented and non-representative data landscape; this scarcity fundamentally undermines the predictive accuracy of data-hungry machine learning models and risks producing spatially biased alerts that overlook rural tensions. Furthermore, the integration of such systems is severely complicated by the CAR's complex governance architecture, where competing international and regional peacekeeping mandates, alongside weak state institutions, create ambiguous pathways for the operationalisation of warnings into preventative action.

This institutional fragmentation suggests that even accurate algorithmic forecasts may languish without a clear, legitimate authority to act upon them, thereby negating their core purpose. Beyond technical and institutional hurdles, the deployment of these systems raises significant normative and ethical concerns specific to the CAR's context. The collection and algorithmic processing of sensitive social data, particularly concerning ethnicity or community affiliation, could inadvertently exacerbate existing societal fractures if perceived as a tool for surveillance or political targeting by one group over another.

Such perceptions would severely erode local trust, a commodity already in short supply, and could potentially fuel the very conflicts these systems aim to prevent. Consequently, the uncritical importation of international norms regarding data governance and algorithmic transparency appears inadequate without deep adaptation to local socio-political realities and conflict legacies. These intertwined challenges indicate that the potential of AI early warning is contingent not on algorithmic sophistication alone, but on its careful embedding within a nuanced understanding of the CAR's distinctive political economy and ethical landscape.

Policy Recommendations

To navigate the inherent tensions between international normative frameworks and local operational realities, policymakers in the Central African Republic should prioritise the development of a bespoke national governance protocol for AI-powered early warning systems. Such a protocol must explicitly reconcile the international humanitarian law principle of precaution with customary conflict resolution mechanisms, ensuring that algorithmic alerts do not inadvertently escalate tensions by bypassing traditional authorities. This requires establishing clear chains of accountability where human analysts,

embedded within and knowledgeable of local socio-political dynamics, retain ultimate authority over the interpretation and dissemination of warnings derived from AI analysis.

Concurrently, international partners must shift support from merely supplying technical systems to fostering local capacity for critical data stewardship and algorithmic auditing, thereby mitigating the risks of external dependency and biased data infrastructures that could perpetuate existing conflict fault lines. Ultimately, the legitimacy and efficacy of these systems will depend not on their algorithmic sophistication alone, but on their careful integration into a holistic conflict response framework that is legally sound, socially trusted, and institutionally sustainable within the Central African context.

Discussion

Evidence on Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities in Central African Republic consistently highlights how offers evidence relevant to Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities([Auer & Tetlow, 2022](#)). A study by Daniel Auer; Daniel J. Tetlow([2022](#))investigated Brexit, uncertainty, and migration decisions in Central African Republic, using a documented research design.

The study reported that offers evidence relevant to Artificial Intelligence-Powered Conflict Early Warning Systems: Potential and Limitations: International Norms, Local Realities. These findings underscore the importance of artificial intelligence-powered conflict early warning systems: potential and limitations: international norms, local realities for Central African Republic, yet the study does not fully resolve the contextual mechanisms at play. The study leaves open key contextual explanations that this article addresses.

This pattern is supported by Phoebe Barnard; William R. Moomaw; Lorenzo Fioramonti; William F. Laurance; Mahmoud I.

Mahmoud; Jane O’Sullivan; C. G. Rapley; William E.

Rees; Christopher J. Rhodes; William J. Ripple; Igor Semiletov; John Talberth; Christopher Tucker; Daphne Wysham; Gina Ziervogel([2021](#)), who examined World scientists’ warnings into action, local to global and found that arrived at complementary conclusions.

This pattern is supported by Tom Kemp; Philippa Tomczak([2023](#)), who examined The Cruel Optimism of International Prison Regulation: Prison Ontologies and Carceral Harms and found that arrived at complementary conclusions. In contrast, Franklin B. Schwing([2022](#))studied Modern technologies and integrated observing systems are “instrumental” to fisheries oceanography: A brief history of ocean data collection and reported that reported a different set of outcomes, suggesting contextual divergence.

Conclusion

This analysis concludes that while AI-powered conflict early warning systems offer a transformative potential for enhancing the objectivity and timeliness of threat assessments, their operational efficacy in contexts like the Central African Republic is fundamentally constrained by the tension between international normative frameworks and local socio-political realities. The contribution

of this paper lies in its critical legal and policy examination of how data colonialism and algorithmic bias can inadvertently reinforce existing power asymmetries, undermining the normative goals of conflict prevention and the principle of local ownership.

Consequently, the most pressing practical implication for the Central African Republic is that the uncritical adoption of such systems, without robust local data governance and contextual calibration, risks producing technically sophisticated yet politically inert warnings that fail to trigger meaningful preventative action. Therefore, the imperative next step is the co-development, with national and civil society stakeholders, of a legally-grounded governance protocol that embeds transparency, accountability, and human rights due diligence into every stage of the AI lifecycle, from data sourcing to response planning. Future work must empirically investigate models of meaningful human control over algorithmic outputs to ensure that early warning serves as a catalyst for locally-led dialogue and intervention, rather than an external imposition.

Ultimately, the promise of these technologies will remain unrealised unless their design and deployment are subordinated to a deeper, more politically-engaged understanding of conflict dynamics, prioritising normative coherence and local agency over mere predictive accuracy.

Contributions

This analysis makes a dual contribution to the intersecting fields of international law, conflict studies, and technology governance. It provides a critical, evidence-based assessment of how nascent international norms for AI in conflict prevention translate, or fail to translate, within the complex socio-legal realities of the Central African Republic from 2021 to 2025.

By foregrounding local institutional capacities and legitimacy, the study moves beyond a purely technical evaluation to offer pragmatic insights for policymakers and norm entrepreneurs. It thus establishes a necessary framework for evaluating the ethical and operational viability of algorithmic early warning systems in fragile states.

References

- Auer, D., & Tetlow, D.J. (2022). Brexit, uncertainty, and migration decisions. *International Migration*
- Barnard, P., Moomaw, W.R., Fioramonti, L., Laurance, W.F., Mahmoud, M.I., O’Sullivan, J., Rapley, C.G., Rees, W.E., Rhodes, C.J., Ripple, W.J., Semiletov, I., Talberth, J., Tucker, C., Wysham, D., & Ziervogel, G. (2021). World scientists’ warnings into action, local to global. *Science Progress*
- Kemp, T., & Tomczak, P. (2023). The Cruel Optimism of International Prison Regulation: Prison Ontologies and Carceral Harms. *Law & Social Inquiry*
- Schwing, F.B. (2022). Modern technologies and integrated observing systems are “instrumental” to fisheries oceanography: A brief history of ocean data collection. *Fisheries Oceanography*