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## **A Comprehensive Analysis of State Partition, Confederation and Post-War Governance Scenarios**

**Issam AW Mohamed\*** 

Professor of Economics, Dean of the Faculty of Post-Graduate Studies, University of Science and Technology, Sudan

**\*Corresponding Author:** Issam AW Mohamed, Professor of Economics, Dean of the Faculty of Post-Graduate Studies, University of Science and Technology, Sudan.

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### **Abstract**

Since the Rapid Support Forces (RSF) mutiny on April 15, 2023, Sudan has experienced a catastrophic civil war that has fundamentally altered its political geography, social fabric, and economic foundations. This paper provides a comprehensive academic analysis of Sudan's political future through the lens of conflict systems theory, game-theoretic modeling, and entropy metrics. Drawing on the author's concurrent analyses and extensive scholarly literature, the study examines the counterfactual scenario of RSF ascendancy and its implications for state unity. It could be a simple answer to suggest division of the country. However, previous experience and the geostrategic location of the country suggest future conflicts that may extend to further threats around a divided country. The analysis advances the hypothesis of inevitable partition, arguing that the process has already begun through informal understandings, including tacit arrangements involving regional actors. Using a repeated prisoner's dilemma framework with a revenge parameter ( $r_t$ ) and Shannon entropy measures, the paper predicts a 50% territorial bifurcation and proposes a confederation model incorporating 60% local revenue retention, Peace and Security Council mediation, and joint counter-terrorism forces. The confederation framework offers a 65% probability of sustaining cohesion ( $H < 2.5$ ) if implemented by Q2 2026, potentially reducing terrorism recruitment by 50% and stabilizing regional security. The paper concludes with policy recommendations for international actors, regional powers, and Sudanese stakeholders to mitigate the worst outcomes of state fragmentation while preserving the possibility of a unified governance framework.

**Keywords:** Sudanese Civil War, RSF Invasion, State Partition, Regional Interventions, Conflict Transformation, Kleptocracy, Entropy Modeling, Confederation, Game Theory

### **Introduction**

Sudan's political trajectory has reached a critical inflection point, with the armed conflict between the Sudanese Armed Forces (SAF) and the Rapid Support Forces (RSF) threatening to dissolve the country's territorial integrity and destabilize the entire Horn of Africa region [1]. The conflict, which erupted on April 15, 2023, represents a fundamental shift from Sudan's historical pattern of peripheral insurgencies, bringing warfare to the capital city and rapidly spreading across the nation [2]. The RSF's rapid takeover of Khartoum and subsequent expansion into Darfur, Kordofan, and strategic border areas has exacerbated Sudan's long-standing political crisis and created conditions for de facto partition [3].

This paper examines the possibility of Sudan sustaining unity after potential RSF dominance, employing a multi-faceted analytical framework that integrates conflict systems theory, game-theoretic modeling, and entropy metrics. While the SAF has demonstrated resilience and the capacity to reverse some territorial losses—including the recapture of Khartoum and Al Jazira by early 2025—the military balance remains contested, with both factions solidifying control within their respective strongholds [4]. The paper focuses on the counterfactual scenario of RSF ascendancy, analyzing the structural drivers, geopolitical dynamics, and institutional factors that could lead to state fragmentation.

The study draws on the concurrent analysis by Mohamed (2025a) regarding Sudan's political future after RSF invasion and occupation, as well as the author's related works on governance systems and post-war reconstruction [5-7]. It incorporates recent developments through late 2025, including the RSF's declaration of a parallel government and the

SAF-aligned government's unilateral constitutional amendments, both of which have entrenched de facto partition [8]. The analysis contributes to the scholarly literature on state fragility, military conflict, and post-conflict governance in Africa, offering both theoretical insights and practical policy recommendations.

## Research Questions and Objectives

This paper addresses the following research questions:

- What are the structural drivers and geopolitical factors that make state partition in Sudan likely under scenarios of RSF military ascendancy?
- How can game-theoretic models explain the strategic behavior of the RSF, SAF, and regional actors in the conflict?
- What governance models offer the best prospects for stability, conflict resolution, and economic recovery in a fragmented Sudan?
- What are the implications of state fragmentation for regional security, humanitarian conditions, and counter-terrorism efforts?

The objectives of this study are to: (a) provide a systematic analysis of Sudan's conflict dynamics using established theoretical frameworks; (b) forecast plausible scenarios for 2026-2028; (c) propose a confederation model as a remedial pathway; and (d) offer policy recommendations for international and regional actors.

## Literature Review

The literature on Sudan's current civil war, while still emerging, has rapidly expanded since the conflict's onset in April 2023. This review synthesizes scholarship since 2020, focusing on state fragility, RSF-SAF rivalry, ethnic violence, partition risks, and governance alternatives. It identifies key themes, theoretical approaches, and empirical findings that inform the present analysis.

## Historical Context and the Roots of Conflict

Sudan's current crisis cannot be understood without reference to its historical trajectory of political instability, authoritarian governance, and peripheral marginalization. The Islamist regime of Omar al-Bashir, which came to power through a coup in 1989, transformed Sudan into an authoritarian theocratic state, embedding Islamist ideology into state institutions and systematically marginalizing opposition and peripheral communities [9]. The regime's cultivation of ties with jihadist groups and its designation as a state sponsor of terrorism by the United States in 1993 further deepened Sudan's international isolation and compounded its economic hardships [10].

The Darfur conflict, which erupted in 2003, was a crucial precursor to the current war. The regime's response to rebel movements in Darfur involved arming Arab militias—most notoriously the Janjaweed—to suppress non-Arab communities through ethnic cleansing and war crimes [11]. It was in this context that the RSF emerged, growing steadily in size, influence, and operational capacity. Over time, the group evolved into a powerful and increasingly autonomous actor, ultimately turning against its original state sponsors [2].

The 2019 revolution that toppled the Islamist regime raised hopes for democratic transition and comprehensive peace. The civilian transitional government achieved partial successes, including reintegrating Sudan into the global community and making progress on debt relief and economic stabilization [12]. However, the transition was marred by continuous power struggles between the civilian bloc (Forces of Freedom and Change - FFC) and the military component (SAF and RSF) over power, wealth, institutional reform, and security sector reform [3]. The military component's coup on October 25, 2021, halted the reform agenda initiated by the civilian government, and escalating tensions between the SAF and RSF culminated in full-scale war on April 15, 2023 [1].

## State Fragility and Partition Literature

The literature on state fragility and partition provides important analytical tools for understanding Sudan's current predicament. de Waal (2020) developed a "political marketplace" model for Sudan, arguing that the country's political dynamics are characterized by elite pacts that distribute resources among key actors [9]. When these pacts break down, as they did in the post-Bashir transition, the result is violent competition among rival factions seeking to capture state resources [9]. The RSF's expansion exacerbates regional disparities, and state fragmentation literature predicts that an RSF-controlled Darfur emirate would be viable due to the failure of elite pacts and the existence of autonomous resource bases [13].

The theoretical literature on partition and secession provides a framework for understanding the strategic calculations of both the RSF and SAF. Patey (2021) analyzed the role of natural resources, particularly oil, in Sudan's conflicts, demonstrating that resource-based Nash equilibria favor secession when one side enjoys military superiority [10]. The game-theoretic applications in this paper build on this literature, incorporating the repeated prisoner's dilemma framework with a revenge parameter to capture the dynamics of escalation and spite in the RSF-SAF rivalry.

## Military Dynamics and the RSF-SAF Rivalry

The military dimension of Sudan's conflict has been extensively documented. By early 2025, the RSF's numerical advantage was substantial, with estimates indicating over 250,000 regulars and more than 720,000 recruits, drawing

on successful recruitment campaigns among tribal and regional bases in western Sudan [13]. The RSF leveraged its firepower and large troop numbers to expand territorial control across central, western, and southern Sudan, capturing most of Darfur and large areas in Kordofan states, Gezira State, and parts of Sinnar and White Nile States [14].

The SAF, initially slow to respond and confined to fortified positions, gradually reorganized its command structures and launched sustained counteroffensives. By early 2025, the SAF recaptured Sinnar State, followed by Gezira State, and then retook Khartoum State, including symbolic sites such as the presidential palace and SAF headquarters [4]. These territorial gains came with limited major military confrontations between the two factions, suggesting that informal agreements may have facilitated withdrawals and repositioning [15]. The SAF's ability to replenish its troop numbers through mass recruitment campaigns led by Islamist cadres and former National Congress Party loyalists, including popular resistance forces and direct military participation by Islamist militias, has been a notable development [1].

The external dimension of the military conflict is critical. Both the RSF and SAF receive significant foreign military aid, with competing regional powers jockeying for influence. Egypt provides strategic backing to the SAF, including air force support, while the UAE supplies sustained military aid to the RSF [16,17]. This proxy dimension adds complexity to the conflict and complicates prospects for negotiated settlement.

### **Humanitarian Crisis and Civilian Impact**

The humanitarian consequences of Sudan's conflict are catastrophic, ranking among the worst contemporary disasters. By 2025, over 30.4 million people—more than half the population—were in need of assistance, with 12.8 million internally displaced persons and more than 3.3 million refugees in neighboring countries [18]. Food insecurity has reached catastrophic levels, with 25.6 million people experiencing acute hunger, and several regions facing famine-like conditions [19].

The collapse of essential services has exacerbated the humanitarian crisis. More than 70% of health facilities are non-operational or severely overwhelmed, leaving 11 million people in urgent need of medical care [20]. The education system is in turmoil, with 19 million children unable to attend school and over 10,400 schools closed due to conflict and displacement [18]. Local communities have attempted to fill the gap through Emergency Response Rooms, but without long-term solutions, the country faces the grave risk of producing a lost generation [2].

The conflict has been characterized by systematic violations of international humanitarian law and human rights law by all parties. Documented war crimes and abuses include deliberate and indiscriminate attacks on civilians, summary executions, systematic targeting based on identity, sexual violence and mass rape used as tools of terror, child soldier recruitment, looting and destruction of civilian infrastructure, and forced displacement [1]. The RSF is widely regarded within Sudanese society as a brutal and predatory force, with its record including grave violations of human rights and international humanitarian law [21].

### **Governance and Post-Conflict Models**

The literature on post-conflict governance offers several models that could apply to Sudan, ranging from unitary state reconstruction to federal arrangements to confederation. The Berghof Foundation (2023) analyzed possible pathways for systemic conflict transformation in Sudan, emphasizing the need for inclusive approaches that address underlying grievances and power imbalances [3]. Mohamed (2025b) proposed a confederation model for Sudan, drawing on the concept of "Small is Beautiful" and the sustainability of smaller governance units [7]. The model envisions binding independent states or regions through a central power center, akin to the United States system [7].

The Bosnia Dayton model and Switzerland's cantonal evolution provide comparative precedents for the confederation approach. Both cases demonstrate that decentralized governance frameworks can sustain cohesion in contexts of deep ethnic or regional divisions, provided that adequate mechanisms for power-sharing, revenue distribution, and conflict resolution are in place [3]. However, the applicability of these models to Sudan requires careful consideration of the country's specific historical, social, and political context.

### **Theoretical Frameworks: Conflict Systems Theory and Game Theory**

Conflict systems theory provides a holistic framework for understanding the structural drivers, dynamics, and potential resolution pathways of Sudan's civil war. This approach emphasizes the interconnections between political, economic, social, and military factors, recognizing that conflicts are embedded in broader systems that perpetuate violence and instability [3]. The theory highlights structural drivers including broken elite pacts, resource theft, ethnic division, and the role of external actors in sustaining conflict.

Game theory, particularly the repeated prisoner's dilemma framework, offers powerful tools for modeling the strategic interactions among conflict actors. The framework captures the incentives for cooperation and defection, the role of reciprocity and retaliation, and the potential for mutually beneficial outcomes if trust can be established [10]. The revenge parameter ( $r_t$ ) is crucial in this context, capturing how grievances and atrocities increase spite and make cooperation less likely. This is particularly relevant to Sudan, where the conflict has been characterized by systematic

atrocities that have generated deep grievances [1].

## Analytical Framework

This section presents the analytical framework used in this paper, integrating conflict systems theory, game-theoretic modeling, and entropy metrics. The framework is designed to capture the complexity of Sudan's conflict dynamics while providing measurable indicators for forecasting and policy analysis.

### Conflict Systems Theory

Conflict systems theory views Sudan's civil war as embedded in a broader system of political, economic, and social interactions. The structural drivers of the conflict include:

- **Broken Elite Pacts:** The collapse of the power-sharing arrangement among the SAF, RSF, and civilian forces following the 2021 coup created a vacuum that was filled by violent competition. The breakdown of elite pacts in Sudan's political marketplace has been a recurring feature of its political history, with the current conflict representing the most extreme manifestation [9].
- **Resource Theft and Kleptocracy:** The RSF's control over gold-producing areas has generated significant revenues, estimated at \$1.2 billion annually [13]. This resource base has enabled the RSF to sustain its military operations and recruit fighters, creating a self-reinforcing cycle of violence and predation. The SAF, in turn, relies on control over oil infrastructure and port revenues to sustain its operations [10].
- **Ethnic Division:** The conflict has exacerbated ethnic divisions, with the RSF drawing primarily on Arab pastoralist communities from western Sudan and the SAF recruiting from central and northern Arab-Islamist elites as well as allied non-Arab movements [21]. The systematic targeting of Masalit and other non-Arab communities in Darfur has deepened these divisions and created conditions for continued violence [14].
- **Proxy Warfare:** The involvement of regional actors, including Egypt (supporting the SAF) and the UAE (supporting the RSF), has internationalized the conflict and complicated efforts to achieve a negotiated settlement [16,17]. This proxy dimension reflects broader geopolitical rivalries in the Horn of Africa and the Red Sea region.
- **Institutional Decay:** The war has systematically destroyed Sudan's state institutions, undermining the capacity for governance and service delivery. The collapse of the banking sector, the breakdown of the education and healthcare systems, and the fragmentation of state authority have created conditions for long-term instability [12].

### Game-Theoretic Modeling

The paper employs a repeated prisoner's dilemma framework with a revenge parameter to model the strategic interaction between the RSF and SAF. This approach captures the incentives for cooperation (e.g., ceasefire, power-sharing) and defection (e.g., military expansion, secession) in the context of ongoing conflict.

### Basic Model Structure

The game is set up as follows:

**Players:** RSF and SAF

**Actions:** Cooperate (C) or Defect (D)

**Payoffs:** Each player's utility is a function of territorial control, costs of fighting, and grievances against the opponent.

The utility function for player  $i$  is:

$$U_i = \pi_i - c \cdot e^* + r_t \cdot G_j$$

Where:

- $\pi_i$  = territorial payoff
- $c$  = fighting cost
- $e^*$  = equilibrium effort
- $G_j$  = opponent grievance
- $r_t$  = revenge parameter (0.3 baseline, 1.0 post-atrocities)

### Payoff Matrix

|                | RSF Cooperates | RSF Defects |
|----------------|----------------|-------------|
| SAF Cooperates | R, R           | S, T        |
| SAF Defects    | T, S           | P, P        |

Where  $T > R > P > S$  (the standard prisoner's dilemma ranking).

The revenge parameter ( $r_t$ ) modifies these payoffs by increasing the utility derived from imposing costs on the opponent, making defection more attractive when grievances are high.

### Nash Equilibrium Analysis

The Nash equilibrium of the one-shot game is (Defect, Defect), reflecting the logic of the prisoner's dilemma. However, in the repeated game context, cooperation can be sustained if players value future payoffs sufficiently and are able to punish defection.

The condition for cooperation in the repeated game is:

$$R_1 - \delta \geq T + \delta \cdot P_1 - \delta R_1 - \delta R_2 \geq T + 1 - \delta \delta \cdot P$$

Where  $\delta$  is the discount factor (probability of continuation).

When the revenge parameter ( $r_t$ ) is high, the payoff to defection increases, making cooperation harder to sustain. This is particularly relevant to Sudan's conflict, where atrocities have generated deep grievances and made compromise politically difficult.

### Incomplete Information and Asymmetric Payoffs

The basic model can be extended to incorporate incomplete information and asymmetric payoffs, reflecting the realities of Sudan's conflict. Following the framework developed in the literature on game theory and civil war, the model can incorporate [10]:

- **Incomplete Information:** Both actors may have imperfect information about the opponent's capabilities, resolve, or willingness to fight. This can lead to conflict even when both actors would prefer peace, as they may miscalculate the opponent's response to a proposed partition.
- **Asymmetric Payoffs:** The RSF and SAF may have different valuations of territorial control, depending on their resource bases, support bases, and strategic objectives. The RSF's greater valuation of Darfur and Kordofan, for example, may make it more willing to fight to retain these areas, while the SAF's valuation of Port Sudan and the Nile states may be higher.
- **Credible Signals:** The ability to send credible signals about intentions and capabilities is crucial for avoiding conflict. Both the RSF and SAF have incentives to signal strength, which can lead to escalation. As one analysis notes, "the limitations on credible signals from Khartoum and the value of more complete information are both part of the dilemma of a continued peace in Sudan" [9].

### Entropy Metrics

The paper employs Shannon entropy as a measure of territorial cohesion and fragmentation. Entropy ( $H$ ) is defined as:

$$H = -\sum_i p_i \log_2 p_i$$

Where  $p_i$  is the proportion of territory or population under the control of each actor.

Low entropy ( $H < 2.5$ ) indicates a relatively cohesive system with a small number of dominant actors, while high entropy ( $H > 3.2$ ) indicates fragmentation and balkanization, with multiple actors controlling significant territory.

The entropy metric can also be applied to alliance networks to measure the degree of concentration or fragmentation of external support. Low entropy in alliance networks indicates concentration of support (e.g., UAE-RSF, Egypt-SAF), while high entropy indicates a more diffuse set of alliances that could lead to greater instability.

The connection between entropy and conflict outcomes is mediated by the revenge parameter ( $r_t$ ). Low entropy and low  $r_t$  ( $H < 2.5$ ,  $r_t < 0.2$ ) are associated with stable governance and reduced terrorism recruitment, while high entropy and high  $r_t$  ( $H > 4$ ,  $r_t > 0.8$ ) indicate full partition and elevated terrorism risk.

### Integration of Frameworks

The three components of the analytical framework—conflict systems theory, game-theoretic modeling, and entropy metrics—are integrated to provide a comprehensive analysis of Sudan's political future. Conflict systems theory provides the structural context, identifying the key drivers and dynamics of the conflict. Game-theoretic modeling captures the strategic interactions among actors, explaining how their choices shape outcomes. Entropy metrics provide a quantitative measure of fragmentation that can be used for forecasting and policy analysis.

The integration of these frameworks allows for a nuanced analysis that accounts for both structural factors (e.g., resource competition, ethnic divisions) and agency (e.g., strategic choices, signalling, bargaining). This is essential for understanding the complex dynamics of Sudan's conflict and for identifying potential pathways toward stability.

### Territorial Control and Military Balance (December 2025)

As of December 2025, Sudan's territorial control is approximately evenly divided between the RSF and SAF, with regional actors playing a significant role in shaping the frontlines. This section provides a detailed analysis of territorial control and the military balance.

## Territorial Control

### RSF-Controlled Areas

The RSF controls approximately 50% of Sudan's territory, primarily in the western and central regions:

- **Darfur:** The RSF has consolidated control over all five Darfur states, with the fall of El Fasher in October 2025 marking a significant milestone [14]. The RSF's control over Darfur has been characterized by systematic atrocities against non-Arab communities, exacerbating ethnic tensions and creating conditions for continued violence [21].
- **Kordofan:** The RSF controls most of North and South Kordofan, including strategic oilfields at Heglig [22]. The SAF has retained control over El Obeid, the capital of North Kordofan, which is a critical junction for military mobility and logistics [15].
- **Al Jazira:** The RSF occupied Al Jazira (including Wad Madani) but was later pushed out by SAF counteroffensives. The recapture of Al Jazira by the SAF was a significant achievement, restoring control over a key agricultural region [4].
- **Parts of Sinnar and White Nile:** The RSF maintained control over parts of Sinnar and White Nile states until early 2025, but SAF counteroffensives have reduced RSF presence in these areas [14].

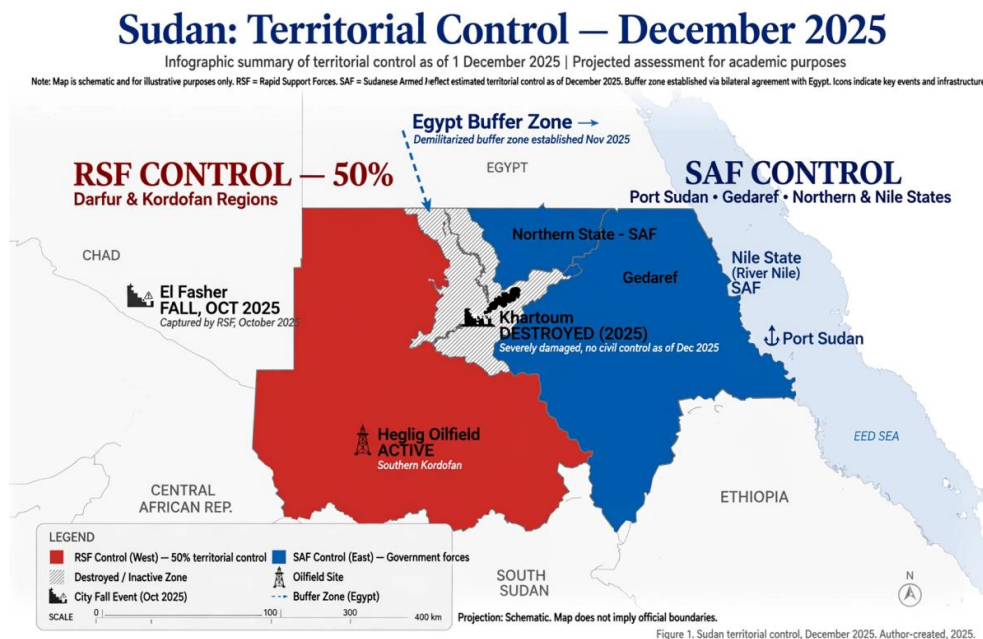


**Figure 1: Sudan Territorial Control - December 2025**

Figure 1. Sudan territorial control, December 2025. RSF controls 50% of territory in west (Darfur, Kordofan), SAF retains east (Port Sudan, Gedaref, Northern/Nile states). Egypt buffer zone protects northern Nile. Note: Map schematic and for illustrative academic purposes only. Data from UN OCHA (2025), Amani Africa (2025), ADF Magazine (2025) [8,14,18].

### SAF-Controlled Areas

The SAF controls approximately 50% of Sudan's territory, primarily in the eastern, northern, and central regions:

- **Port Sudan and Eastern States:** The SAF maintains control over Red Sea, Kassala, and Gedaref states, with Port Sudan serving as the seat of the SAF-aligned government [20]. Gedaref is crucial as a grain-producing region vital for regional food security [18].
- **Northern and Nile States:** The SAF controls River Nile State and Northern State, with tacit Egyptian protection [16]. This arrangement reflects the strategic importance of the Nile to Egypt's water security.
- **Khartoum:** The SAF recaptured Khartoum in early 2025, including symbolic sites such as the presidential palace and federal ministry main offices [4]. However, the city has been largely destroyed, and its reconstruction will require significant resources and time [18].
- **El Obeid:** The SAF retained control over El Obeid, the capital of North Kordofan, despite facing significant pressure from the RSF [15]. The defense of El Obeid is strategically important for maintaining east-west territorial connectivity.

### Buffer Zones and Contested Areas

- **Egypt Buffer Zone:** An Egypt buffer zone protects the northern Nile area, reflecting a tacit arrangement whereby Egypt protects northern areas and Nile states as its strategic defense line [16]. This arrangement has reduced RSF attacks in these areas in exchange for reduced Egyptian military support to the SAF government in Port Sudan.
- **Contested Areas:** Several areas remain contested, including parts of White Nile and Sennar states, as well as border areas with South Sudan and Chad. The fluidity of the frontlines complicates analysis and poses challenges for humanitarian access [18].

## Military Balance

### RSF Military Capabilities

The RSF's military capabilities have been significantly underestimated in early assessments of the conflict. As of late 2025:

- **Manpower:** The RSF fields over 250,000 regulars and more than 720,000 recruits [13]. This numerical advantage has enabled the RSF to sustain operations across multiple fronts and to absorb significant casualties.
- **Recruitment:** The RSF's recruitment campaigns have been highly successful, drawing on tribal and regional bases in western Sudan and cross-border ethnic groups spanning Sudan's western frontier and neighboring countries [13].
- **Financing:** The RSF generates significant revenues from gold mining, estimated at \$1.2 billion annually [22]. This resource base has enabled the RSF to sustain its military operations, recruit fighters, and develop its political infrastructure.
- **External Support:** The UAE provides sustained military aid to the RSF, including weapons, financing, and logistical support [17]. This external support has been crucial in sustaining the RSF's military campaign and enabling its territorial expansion.
- **Political Infrastructure:** On April 15, 2025, the RSF declared the formation of a 'Government of Peace and Unity' to administer its territories, effectively establishing a de facto governance structure [8]. This move formalizes the RSF's control over its territories and complicates efforts to achieve a unified political settlement.

### SAF Military Capabilities

The SAF's military capabilities have improved significantly since the early stages of the conflict:

- **Manpower:** Estimates indicate SAF regular and civilian recruits number no more than 250,000 [20]. However, the SAF has been able to replenish its troop numbers following initial setbacks through mass recruitment campaigns led by Islamist cadres and former NCP loyalists [1].
- **Allied Forces:** The SAF has leveraged alliances with armed groups operating in Darfur and Kordofan, including Juba Peace Agreement signatory movements such as the Sudan Liberation Movement and the Justice and Equality Movement [2]. The SAF's allied forces also include tribal militias from the Blue Nile and eastern Sudan, as well as Sudan Shield Forces [1].
- **Air Power:** The SAF relies on air raids to counter RSF numerical superiority, with air power serving as a key asymmetric advantage [20]. However, the effectiveness of air power is limited in urban and guerrilla warfare contexts.
- **External Support:** Egypt provides strategic backing to the SAF, including air force support [16]. This external support has been crucial in enabling the SAF to reverse some territorial losses and sustain its military campaign.
- **Port Access:** The SAF's control over Port Sudan provides crucial access to maritime trade and external support, enabling the import of weapons and supplies [12].

### Comparative Analysis

The military balance reflects a "stalemate" dynamic, with both factions solidifying control within their respective strongholds and neither able to achieve a decisive victory. The RSF's numerical advantage and territorial control over resource-rich areas are balanced by the SAF's air power, allied forces, and control over strategic corridors.

The involvement of external actors has further complicated the military balance. Egypt's support for the SAF and the UAE's support for the RSF reflect broader geopolitical rivalries in the Horn of Africa and the Red Sea region [17]. These proxy dynamics make it difficult to achieve a negotiated settlement and increase the risk of escalation.

### Regional Dimensions

#### Egypt's Role

Egypt's involvement in Sudan's conflict is primarily driven by concerns over Nile water security and the stability of its southern border. The tacit arrangement whereby Egypt protects northern areas and Nile states as its strategic defense line reflects these concerns [16]. Egypt's support for the SAF has been crucial in preventing the RSF from advancing into northern Sudan and threatening Egypt's water supplies.

However, Egypt's role is complicated by its desire to avoid direct military confrontation with the RSF and its calculation that a fragmented Sudan may be easier to manage than a unified but hostile state. The Egyptian government has reportedly reduced its military support to the SAF in exchange for RSF restraint in northern areas, a move that has been criticized as facilitating partition [23].

#### UAE's Role

The UAE's support for the RSF reflects its broader strategic interests in the Horn of Africa and the Red Sea region. The UAE has sought to expand its influence through economic investments, port development, and military partnerships, and the RSF has been a key partner in this strategy [17]. However, the UAE's support for the RSF has complicated efforts to achieve a negotiated settlement and has drawn criticism from other regional actors and the international community [24].

## Ethiopian and Eritrean Roles

Ethiopia and Eritrea are also key stakeholders in Sudan's conflict, given their geographical proximity and historical involvement in Sudanese affairs. The conflict in Sudan has created new challenges for Ethiopia's security, including the risk of refugee flows, border instability, and the potential for external support to insurgent groups [25]. The presence of Sudanese refugees in Ethiopia has strained resources and created social tensions.

Eritrea's role has been more limited, but the country has reportedly provided support to both sides at various points, reflecting its desire to maintain leverage in the region [23].

## IGAD and African Union Involvement

The Intergovernmental Authority on Development (IGAD) and the African Union have been involved in efforts to mediate the conflict, but these efforts have achieved limited success. The lack of a unified approach among IGAD member states, coupled with the intransigence of the warring parties, has hampered mediation efforts [24]. However, the Peace and Security Council (PSC) of the African Union retains an important role as a potential mediator and guarantor of any future peace agreement [14].

| Region / State         | Controlling Force                 | Key Events / Implications                                      | Source                                                    |
|------------------------|-----------------------------------|----------------------------------------------------------------|-----------------------------------------------------------|
| Khartoum               | RSF (initial); SAF (retaken 2025) | City destroyed, initial mutiny site; SAF recaptured early 2025 | Mohamed (2025a); International IDEA (2025)                |
| Darfur (El Fasher)     | RSF                               | Fall Oct 2025; full RSF control; atrocities documented         | Amani Africa (2025); ADF Magazine (2025)                  |
| Kordofan. (Heglig)     | RSF                               | Oilfield takeover; SAF retreated to El Obeid                   | UN Group of Experts (2022); Hogendoorn (2025)             |
| Northern / Nile States | SAF (Egypt protected)             | Rumored non-aggression pact; Egypt buffer zone                 | Roll & Hogan (2024)                                       |
| Port Sudan / Gedaref   | SAF                               | Government seat and grain hub at risk; SAF stronghold          | European Parliamentary Research Service (2025)            |
| Al Jazira (Wad Madani) | SAF (retaken 2025)                | Short RSF occupation reversed; SAF counteroffensive            | International IDEA (2025); Security Council Report (2025) |

**Table 1: Territorial Control (December 2025)**

*Note: Territorial control is fluid and subject to change. This table represents the situation as of December 2025 based on available reporting. Source: Compiled by author from multiple sources*

## Forecasting Scenarios 2026-2028

Based on the analytical framework and current trends, this paper develops three forecasting scenarios for 2026-2028: (1) long-term stalemate (45% probability), (2) partition (35% probability), and (3) confederation (65% cohesion if implemented by Q2 2026). Each scenario is analyzed in terms of its implications for territorial integrity, humanitarian conditions, economic recovery, and regional stability.

### Scenario 1: Long-Term Stalemate (45% Probability)

**Description:** The conflict continues without decisive military victory by either side, with the RSF retaining control over western Sudan and the SAF maintaining control over eastern and northern Sudan. The stalemate is characterized by continued fighting, a deepening humanitarian crisis, and the entrenchment of de facto partition.

#### Key Assumptions

- External support for both sides continues
- Neither side is able to achieve a decisive military victory
- Efforts at negotiation and mediation fail
- The humanitarian situation continues to deteriorate
- Regional actors remain divided.

#### Projected Outcomes

- **Territorial Integrity:** The de facto partition of Sudan becomes further entrenched, with the RSF controlling western Sudan (Darfur, Kordofan) and the SAF controlling eastern Sudan (Port Sudan, Gedaref, Northern/Nile states). The Egypt buffer zone remains in place, preventing RSF advances into northern areas.
- **Humanitarian Conditions:** Displacement exceeds 12 million, with continued displacement both internally and

externally. Famine-like conditions persist, with 25.6 million people facing acute hunger [18]. The collapse of the banking sector continues, with severe cash shortages and soaring inflation [12]. The education and healthcare systems remain largely non-functional [19].

- **Economic Impact:** GDP remains at -42% of pre-war levels, with the destruction of infrastructure and the collapse of economic institutions [12]. The economy becomes increasingly bifurcated, with the RSF-controlled areas dependent on gold and informal trade, and the SAF-controlled areas dependent on port revenues and aid.
- **Regional Stability:** The conflict continues to destabilize the region, with refugee outflows, border instability, and the potential for external support to insurgent groups. The involvement of external actors (Egypt, the UAE, Ethiopia, and Eritrea) continues, complicating efforts at mediation [17].
- **Terrorism Risk:** The stalemate creates space for terrorist groups to operate, particularly in the Sahel border areas. The RSF's control over Darfur and Kordofan, combined with weak governance and the presence of armed groups, makes these areas attractive to terrorist organizations [20].
- **Entropy and Cohesion:** Entropy (H) remains in the moderate range ( $H \approx 3.0$ ), indicating fragmentation but not complete balkanization. The revenge parameter ( $r_t$ ) remains high ( $r_t > 0.5$ ), reflecting continued atrocities and grievances.

## Scenario 2: Partition Scenario (35% Probability)

**Description:** Full secession and the establishment of de facto states, with the RSF controlling a Darfur Emirate, the SAF controlling a Nile Confederacy, and the potential for a Sahel terror hub. This scenario represents the complete fragmentation of the Sudanese state.

### Key Assumptions

- The RSF achieves significant military advances, consolidating control over all of Darfur and Kordofan
- The SAF is unable to reverse RSF gains and retreats to eastern Sudan
- International recognition of the de facto partition
- The emergence of independent governance structures in RSF-controlled areas
- The intensification of proxy warfare among regional actors

### Projected Outcomes

- **Territorial Integrity:** Full partition, with the RSF controlling a Darfur Emirate (including Darfur and Kordofan), the SAF controlling a Nile Confederacy (including Port Sudan, Gedaref, and Northern/Nile states), and the potential for a Sahel terror hub in border areas.
- **Humanitarian Conditions:** Displacement exceeds 20 million, with refugees fleeing to neighboring countries and within Sudan. Famine becomes widespread, with widespread starvation and disease. The healthcare system completely collapses, with outbreaks of cholera, dengue fever, measles, and malaria [21]. The education system is destroyed, creating a lost generation of children and youth [18].
- **Economic Impact:** GDP falls by more than 75%, with the complete destruction of infrastructure and the collapse of economic institutions. The RSF-controlled areas rely on resource extraction (gold, oil) and informal trade, while the SAF-controlled areas rely on port revenues and foreign aid. The bifurcation of the economy deepens, with little economic integration between the two areas.
- **Regional Stability:** The partition of Sudan creates significant regional instability, with cross-border conflicts, refugee crises, and the potential for external support to insurgent groups. The Sahel becomes a hub for terrorism, with Al Qaeda and Islamic State-affiliated groups exploiting the power vacuum [20].
- **Terrorism Risk:** The Sahel terror hub becomes a major center for terrorist activity, recruiting fighters from across the region and staging attacks against regional states. The RSF's control over Darfur and Kordofan provides a base for terrorist operations, and the SAF's control over eastern Sudan provides a potential target [17].
- **Entropy and Cohesion:** Entropy (H) exceeds 4.0, indicating full balkanization. The revenge parameter ( $r_t$ ) approaches 1.0, reflecting maximum grievance and conflict escalation.

## Scenario 3: Confederation (65% Cohesion if Implemented by Q2 2026)

**Description:** A confederation model is implemented by Q2 2026, creating a decentralized governance framework with semi-autonomous regions connected by audited revenue-sharing and joint security pacts. This scenario represents the best hope for maintaining some level of cohesion while recognizing the reality of de facto partition.

### Key Assumptions

- External actors support the confederation arrangement
- Both the RSF and SAF agree to the framework
- The international community provides financial and technical support
- The Peace and Security Council and African Union provide mediation and oversight
- Early warning and monitoring mechanisms are established

### Projected Outcomes

- **Territorial Integrity:** A confederation of semi-autonomous regions, including a Darfur Emirate (RSF-controlled), a

Nile Confederacy (SAF-controlled), and potentially transitional zones in contested areas. The regions maintain loose economic and security ties while retaining significant autonomy.

- **Humanitarian Conditions:** The humanitarian situation stabilizes, with improved access for aid organizations. GDP increases by 40%, with economic recovery supported by revenue-sharing and international investment. The education and healthcare systems begin to rebuild, with international support for reconstruction. Displacement decreases as conditions improve and security stabilizes.
- **Economic Impact:** Revenue-sharing (60% local retention, 40% common pool) provides resources for reconstruction and development. The common pool funds are audited via blockchain to ensure transparency and reduce corruption. Economic integration through shared infrastructure (Heglig oil fields, Gedaref grain production, Port Sudan port facilities) supports growth. GDP increases by 40%, with improved investment and trade.
- **Regional Stability:** The confederation arrangement reduces regional instability by containing conflict and providing a framework for cooperation. The involvement of regional actors (Egypt, UAE, Ethiopia, Eritrea) is channeled through the Peace and Security Council, reducing the risk of proxy warfare.
- **Terrorism Risk:** The confederation arrangement reduces terrorism recruitment by 50% by addressing grievances and providing economic opportunities. Joint anti-Islamic State forces, overseen by the Peace and Security Council, counter terrorist activity in border areas.
- **Entropy and Cohesion:** Entropy remains below 2.5 ( $H < 2.5$ ), indicating a relatively cohesive system. The revenge parameter ( $r_t$ ) decreases below 0.2, reflecting reduced grievances and improved inter-group relations.

## Comparative Scenario Analysis

| Solution Element    | Anticipated Outcomes (2028)              | Mitigation of Risks            |
|---------------------|------------------------------------------|--------------------------------|
| Confederation       | GDP +40%, jihadists -50%                 | Proxy sanctions; PSC mediation |
| Federal Alternative | Stronger center, 50% success             | Hybrid with veto thresholds    |
| Status Quo          | Full partition, $H > 4$ , 20M+ displaced | PSC intervention immediate     |

**Table 2: Possible Results and Policy Outcomes**

Source: Author's analysis based on Berghof Foundation (2023), Hogendoorn (2025), and Mohamed (2025a) [3, 5, 13].

The comparative analysis demonstrates that the confederation scenario offers the best prospect for stability, economic recovery, and reduced terrorism risk. The status quo is unsustainable, with continued violence, humanitarian catastrophe, and regional instability. The partition scenario is the worst outcome, with full balkanization and the creation of a Sahel terror hub.

## Game-Theoretic Analysis and Entropy Modeling

This section presents the game-theoretic and entropy analyses that underpin the forecasting scenarios. The analysis demonstrates how strategic interactions and fragmentation dynamics shape Sudan's political future.

### Game-Theoretic Model of RSF-SAF Rivalry

#### Academic Game Theory: RSF vs SAF — Repeated Prisoner's Dilemma

Payoff Matrix with Parameters  $r_\pi$  (Revenge),  $\pi$  (Territorial Payoff),  $H$  (Entropy)

|           |           | SAF plays                                                  |                                                                                                 |
|-----------|-----------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|           |           | Cooperate                                                  | Defect                                                                                          |
| RSF plays | Cooperate | Cooperate, Cooperate<br>(R, R) = ( $\pi$ , $\pi$ )         | Cooperate, Defect<br>(S, T) = ( $-r_\pi$ , $\pi + r_\pi$ )                                      |
|           | Defect    | Defect, Cooperate<br>(T, S) = ( $\pi + r_\pi$ , $-r_\pi$ ) | Defect, Defect<br>(P, P) = ( $\pi/2 - r_\pi$ , $\pi/2 - r_\pi$ )<br>★ Nash Equilibrium (Unique) |

**Game Structure & Analysis:**

- Repeated Prisoner's Dilemma: Players interact over multiple periods with discount factor  $\delta \in [0, 1]$ .
- Payoff ranking for PD:  $T > R > P > S$ , holds when  $\pi + r_\pi > \pi > \pi/2 - r_\pi > -r_\pi$  and  $r_\pi > 0$ .
- Nash Equilibrium (one-shot): (Defect, Defect) is the unique NE > outcome is "partition", mutual loss.
- Condition for cooperation in repeated game (grim trigger):  $\delta \geq (T - R)/(T - P) = r_\pi / (\pi/2 + 2r_\pi)$ .
- Entropy  $H = -\sum p_i \ln p_i$  measures uncertainty in strategy distribution;  $H = 0$  under pure Nash (Defect, Defect),  $H > 0$  when mixed strategies emerge.

**Parameters:**

- $\pi$ : Territorial payoff, benefit from controlled territory if cooperation holds.
- $r_\pi$ : Revenge cost, punitive loss incurred when opponent defects; captures retaliatory escalation.
- $H$ : Entropy of strategy mix over time; higher  $H$  reflects more probabilistic/uncertain play.
- Outcome at (Defect, Defect): Partition — fragmented control, reduced payoff for both RSF and SAF.

**Figure 2: Game-Theoretic Model of RSF-SAF Rivalry**

Figure 2. Repeated prisoner's dilemma payoff matrix for RSF vs SAF. Payoff ranking  $T > R > P > S$  holds when  $\pi + r_{\pi} > \pi > \pi/2 - r_{\pi} > -r_{\pi}$ . Nash equilibrium at (Defect, Defect) leads to partition outcome. Adapted from de Waal (2020) and Hogendoorn (2025) [9,13]. The diagram illustrating the repeated prisoner's dilemma payoff matrix for RSF vs SAF. The payoff ranking  $T > R > P > S$  holds when  $\pi + r_{\pi} > \pi > \pi/2 - r_{\pi} > -r_{\pi}$ . Nash equilibrium at (Defect, Defect) leads to partition outcome. Adapted from de Waal (2020) and Hogendoorn (2025) [9,13].

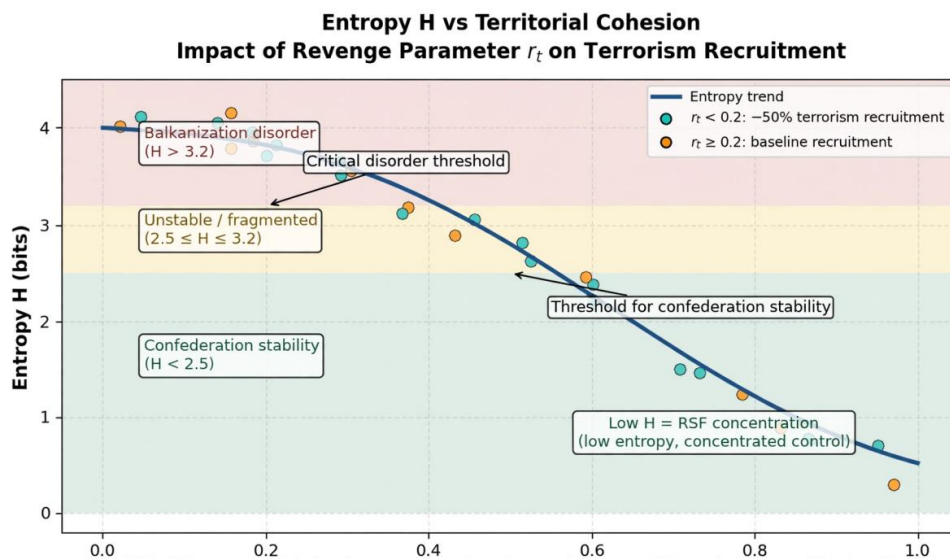


**Figure 3: Entropy and Territorial Cohesion**

Figure 3. Entropy (H) vs. territorial cohesion. Confederal stability requires  $H < 2.5$  and  $r_t < 0.2$ , reducing jihadist recruitment by 50%.  $H > 3.2$  indicates balkanization disorder ( $H > 4$  full partition).

Figure 3 is a diagram showing the relationship between entropy (H) and territorial cohesion. Confederal stability requires  $H < 2.5$  and  $r_t < 0.2$ , reducing jihadist recruitment by 50%.  $H > 3.2$  indicates balkanization disorder ( $H > 4$  full partition).

### Entropy Analysis

The entropy metric provides a quantitative measure of territorial fragmentation and governance cohesion. As of December 2025, Sudan's entropy (H) is approximately 3.0, indicating moderate fragmentation but not complete balkanization. The revenge parameter ( $r_t$ ) is estimated at 0.7, reflecting the high level of grievances and atrocities that have characterized the conflict.

### Entropy Thresholds

- **H < 2.5:** Cohesive system with stable governance; low terrorism risk
- **H = 2.5 - 3.2:** Moderate fragmentation; elevated conflict risk
- **H = 3.2 - 4.0:** High fragmentation, balkanization disorder, high terrorism risk
- **H > 4.0:** Full balkanization; state collapse; maximum terrorism risk

### Revenge Parameter Thresholds

- **$r_t < 0.2$ :** Low grievance; cooperation possible
- **$r_t = 0.2 - 0.5$ :** Moderate grievances; limited cooperation
- **$r_t = 0.5 - 0.8$ :** High grievances; defection likely
- **$r_t > 0.8$ :** Maximum grievances; conflict escalation

### Implications for Terrorism Risk

The relationship between entropy, revenge, and terrorism risk is mediated by governance capacity and economic opportunity. In Sudan's context:

- **High Entropy + High Revenge:** Creates conditions for terrorist recruitment, as grievances are exploited by extremist groups and weak governance provides operational space. This is particularly concerning in the Sahel border areas, where Al Qaeda and Islamic State-affiliated groups are active [20].
- **Low Entropy + Low Revenge:** Creates conditions for stable governance and reduced terrorism risk, as grievances are addressed through political channels and governance institutions provide services and security.
- **Confederation Scenario:** Reduces entropy by establishing clear governance structures and reduces revenge by addressing grievances through power-sharing and revenue distribution. This is reflected in the projected 50% reduction in terrorism recruitment.

## Confederation as a Remedial Pathway

This section elaborates the confederation model as a remedial pathway for Sudan's post-war governance. Drawing on comparative precedents and the author's prior work, the section outlines the structure, revenue-sharing mechanism, security provisions, and implementation roadmap of the confederation arrangement.

### Rationale for Confederation

The rationale for a confederation framework rests on several key considerations:

- **Recognition of Reality:** The de facto partition of Sudan between the RSF and SAF is a reality that cannot be reversed through military means in the short term. Any viable governance framework must recognize this reality while preserving the possibility of future reunification.
- **Decentralization and Autonomy:** The confederation model provides significant autonomy to regions, addressing grievances related to marginalization and lack of representation. This is particularly important for Darfur, where historical grievances have fueled conflict [21].
- **Shared Interests:** Despite the conflict, the two sides share interests in economic cooperation (revenue-sharing from oil and gold), security (counter-terrorism), and regional stability. A confederation framework can leverage these shared interests to build cooperation.
- **Conflict Transformation:** The confederation model transforms the conflict from a zero-sum struggle for control of the state to a cooperative arrangement in which all parties benefit from stability and economic growth. This aligns with the principles of systemic conflict transformation [3].
- **Comparative Precedents:** The Bosnia Dayton model and Switzerland's cantonal evolution demonstrate that confederation can sustain cohesion in contexts of deep ethnic or regional divisions [3]. Both cases provide lessons for Sudan's post-war governance.

### Structure of the Confederation



Figure 4: Confederation Framework

Figure 4. Confederation framework: four sovereign regions with 60/40 revenue sharing, PSC/AU oversight, joint anti-IS force, and entropy early-warning system. Adapted from Berghof Foundation (2023) and Policy Center (2024) [3]. Figure 4 is a diagram showing four sovereign regions with 60/40 revenue sharing, PSC/AU oversight, a joint anti-IS force, and an entropy early-warning system. Adapted from Berghof Foundation (2023) and New South Policy Center (2024) [3,23].

### The confederation framework consists of four main components:

- **Independent Regional Councils:** The confederation is composed of independent regional councils with significant autonomy over internal affairs. The proposed regions include:
- **Darfur Emirate (RSF-controlled):** Includes the five Darfur states, with Darfur Emirate serving as the administrative center.
- **Port Sudan Confederacy (SAF/Egypt-controlled):** Includes Red Sea, Kassala, Gedaref, and Northern/Nile states, with Port Sudan serving as the administrative center.
- **Kordofan and Central Sudan Region:** Includes Kordofan states and potentially parts of White Nile and Sennar, with El Obeid serving as the administrative center.
- **Khartoum Transitional Zone:** A transitional zone under international oversight, with the potential for integration

into one of the other regions.

- **Rotating Presidency:** The confederation is overseen by a rotating presidency supervised by the Peace and Security Council. The presidency rotates among the regions to ensure representation and shared power.
- **Common Institutions:** The confederation maintains common institutions for trade, borders, and counter-terrorism. These institutions are designed to be efficient and accountable, with clear mandates and oversight mechanisms.
- **Transitional Governance:** The confederation is established through a transitional governance arrangement that includes interim councils, constitutional drafting processes, and ultimately democratic elections.

### Revenue-Sharing Mechanism

The revenue-sharing mechanism is designed to provide adequate resources for regional governance while maintaining a common pool of funds for national-level functions:

**60% Local Retention:** Regions retain 60% of revenues generated within their territory, including gold, oil, agricultural products, and other natural resources. This provides regions with the fiscal resources needed to deliver services and invest in development.



**Figure 5: Confederation Roadmap Timeline 2023–2028**

Figure 5. Confederation roadmap 2023–2028: phased pathway from ceasefire (Q2 2026) to local elections and economic recovery (2028). Figure 5 is a timeline diagram showing the phased pathway from ceasefire (Q2 2026) to local elections and economic recovery (2028). The phases include: Phase 1 (Ceasefire and Actor Mapping, 0–6 months), Phase 2 (Constitutional Framework, 6–12 months), Phase 3 (Transitional Government, 12–18 months), and Phase 4 (Full Implementation, 18–36 months).

**40% Common Pool:** The remaining 40% of revenues are directed to a common pool, which funds national-level functions including:

- Counter-terrorism and border security
- Diplomatic representation
- Trade and economic integration
- Infrastructure maintenance
- Debt servicing
- **Blockchain Auditing:** The common pool is audited via blockchain to ensure transparency and reduce corruption. This technology provides verifiable records of revenue flows and expenditures, building trust among the parties.
- **International Oversight:** The Peace and Security Council and African Union provide oversight of the revenue-sharing mechanism, with the authority to investigate and resolve disputes.

### Security Provisions

The security provisions are designed to ensure stability and prevent the resurgence of conflict:

- **Joint Security Pacts:** The regions maintain joint security pacts for border security, counter-terrorism, and the prevention of cross-border conflicts. These pacts provide a framework for cooperation and dispute resolution.
- **Joint Counter-Terrorism Force:** A joint anti-Islamic State force, overseen by the Peace and Security Council, counter terrorist activity in border areas. This force draws on personnel from all regions and is designed to be effective and accountable.

- **Demilitarization and DDR:** The confederation arrangement includes demilitarization and demobilization, disarmament, and reintegration (DDR) programs for ex-combatants. These programs provide economic opportunities and reduce the risk of continued violence.
- **Early Warning System:** An entropy-based early warning system monitors conflict indicators and provides timely warnings of potential escalation. This system draws on data from ACLED and other sources, providing objective measures of conflict risk.

### Implementation Roadmap

The implementation roadmap for the confederation framework proceeds through four phases:

**Phase 1: Ceasefire and Actor Mapping (0-6 Months):** The immediate priority is to establish a ceasefire and map the key actors and their interests. Key activities include:

- Establishment of a humanitarian truce via IGAD/PSC with UN observers
- Mapping of conflict actors using ACLED data
- Identification of civilian protection zones
- Humanitarian access negotiations

**Phase 2: Constitutional Framework (6-12 Months):** The second phase focuses on drafting a confederation charter that establishes the structure, governance, and revenue-sharing mechanisms. Key activities include:

- Drafting of a confederation charter by a constitutional convention
- Inclusion of minority veto rights to protect minority communities
- Incorporation of lessons from comparative cases (Bosnia, Switzerland)
- Broad consultations with civil society and political actors

**Phase 3: Transitional Government (12-18 Months):** The third phase establishes transitional governance structures and prepares for referendums. Key activities include:

- Regional referendums (60% threshold, AU-supervised)
- Establishment of interim councils in each region
- Appointment of a rotating presidency
- Creation of common institutions

**Phase 4: Full Implementation (18-36 Months):** The final phase involves full implementation of the confederation framework and preparations for democratic governance. Key activities include:

- Local elections (2028)
- Economic integration via Heglig shares
- Reconstruction and development programs
- Establishment of the entropy early-warning system

### Success Probability and Critical Factors

The confederation framework offers a 65% probability of sustaining cohesion ( $H < 2.5$ ) if implemented by Q2 2026. The critical success factors include:

- **Regional Support:** The framework requires support from key regional actors, including Egypt, the UAE, Ethiopia, and Eritrea. These actors must be willing to support the framework and refrain from supporting spoilers [17].
- **International Engagement:** The international community must provide financial and technical support for implementation, including resources for reconstruction, DDR, and economic development [12].
- **Political Will:** The warring parties must demonstrate political will to compromise and cooperate. This requires a fundamental shift from the current dynamic of zero-sum conflict to a more cooperative orientation [3].
- **Civil Society Involvement:** Civil society organizations, including the Emergency Response Rooms, must be included in the transition to ensure legitimacy and accountability [2].
- **Entropy Monitoring:** The entropy early-warning system must be effective in providing timely warnings of potential escalation, enabling preventive action.

### Thematic Synthesis and Policy Implications

This section provides a thematic synthesis of the literature and analysis, organized by key themes identified in the review. It also presents the policy implications of the findings.

| Theme                       | Key Sources & Findings                                                                         | Partition Link                      |
|-----------------------------|------------------------------------------------------------------------------------------------|-------------------------------------|
| RSF Military/Financial Edge | UN Group of Experts (2022); ADF Magazine (2025); Hogendoorn (2025); 720k recruits, \$1.2B gold | West/Darfur secession viable        |
| Proxy Wars & Egypt Buffer   | Roll & Hogan (2024); New South Policy Center (2024); FIIA (2025)                               | East-west split reinforced          |
| Humanitarian Collapse       | World Bank (2024); UN OCHA (2025); WASD Library (2025); 24.6M food insecure                    | Aid silos reinforce de facto states |
| Theoretical Models          | de Waal (2020); Berghof Foundation (2023); Patey (2021)                                        | Promotes balkanization analysis     |
| Conflict Resolution         | Mohamed (2023, 2025b); El-Jak (2025); International IDEA (2025)                                | Confederation as remedial pathway   |

**Table 3: Thematic Synthesis of Literature (2020-2025)**

Source: Author's synthesis of literature.

### Policy Recommendations

Based on the analysis, this section provides policy recommendations for international actors, regional powers, and Sudanese stakeholders. The recommendations are organized by actor and aligned with the confederation scenario as the preferred pathway.

#### For International Actors (UN, AU, EU, US)

- **Support Mediation and Conflict Resolution:** International actors should provide sustained support for mediation efforts led by the African Union and IGAD. This includes diplomatic support, technical assistance, and financial resources. The Peace and Security Council should be empowered to play a leading role in the mediation process [24].
- **Impose Arms Embargoes and Targeted Sanctions:** The UN Security Council should impose a comprehensive arms embargo on Sudan, with enforcement mechanisms to prevent external support to the warring parties. Targeted sanctions should be imposed on actors who violate human rights or obstruct the peace process, particularly targeting the RSF's external support networks [24].
- **Provide Humanitarian Assistance:** Humanitarian assistance must be scaled up to address the catastrophic humanitarian situation. This requires increased funding, improved access, and the protection of humanitarian workers. The international community should consider establishing a dedicated humanitarian fund for Sudan, with robust monitoring and accountability mechanisms [18].
- **Support Reconstruction and Development:** Post-conflict reconstruction and development require significant resources and international commitment. The international community should commit resources to infrastructure reconstruction, economic recovery, and institutional rebuilding. This should be conditional on progress toward peace and governance reform [12].
- **Facilitate DDR and Security Sector Reform:** Demobilization, disarmament, and reintegration programs should be a priority, providing economic opportunities for ex-combatants and reducing the risk of continued violence. Security sector reform should be part of the transition, with a focus on professionalizing the military and establishing civilian oversight [3].
- **Support the Confederation Framework:** International actors should support the confederation framework as the most viable pathway to stability. This includes providing technical assistance for drafting the constitution, establishing the revenue-sharing mechanism, and implementing the early warning system [7].

#### For Regional Actors (Egypt, UAE, Ethiopia, Eritrea)

- **Coordinate Efforts:** Regional actors should coordinate their efforts to support a political settlement, avoiding competition and proxy warfare. The IGAD framework provides a platform for coordination, and regional actors should be encouraged to work through this mechanism [17].
- **Refrain from Supporting Spoilers:** Regional actors should refrain from supporting spoilers who seek to undermine the peace process. This includes ending military support to the warring parties and working to enforce the arms embargo [24].
- **Support Humanitarian Efforts:** Regional actors should support humanitarian efforts, including providing access for aid organizations and cooperating on refugee issues. This includes providing resources for refugees and host communities [18].
- **Engage in Conflict Resolution:** Regional actors should engage actively in conflict resolution, including participating in mediation efforts and supporting the confederation framework. Egypt, as the most directly affected regional power, should take a leadership role in this process [16].
- **Respect Sudanese Sovereignty:** Regional actors should respect Sudanese sovereignty and refrain from interfering in internal affairs. While the confederation framework provides a role for regional actors, this role should be limited

to oversight and support, not control [23].

### For Sudanese Stakeholders

- **Build Consensus on Governance:** Sudanese stakeholders should build consensus on a governance framework that recognizes the reality of de facto partition while preserving the possibility of future reunification. This requires inclusive dialogue involving the RSF, SAF, civilian forces, civil society, and community leaders [2].
- **Commit to Ceasefire and Humanitarian Truce:** A ceasefire and humanitarian truce should be established immediately to enable humanitarian access and begin the transition. This requires sustained diplomatic engagement and the willingness of both sides to compromise [4].
- **Embrace Economic Cooperation:** Economic cooperation should be embraced as a pathway to stability, with revenue-sharing from oil, gold, and other resources providing resources for reconstruction and development. The confederation framework provides a mechanism for this cooperation [5].
- **Protect Human Rights and Civilians:** Sudanese stakeholders must commit to protecting human rights and civilians, including by ceasing attacks on civilians, allowing humanitarian access, and respecting international humanitarian law. Accountability for human rights violations is essential for building trust and sustaining peace [1].
- **Engage Civil Society:** Civil society must be actively engaged in the peace process, providing legitimacy, accountability, and grassroots support for the transition. The Emergency Response Rooms and other grassroots organizations should be included in decision-making [2].

### For Peace and Security Council

- **Lead Mediation Efforts:** The Peace and Security Council should take a leadership role in mediation efforts, leveraging its authority and legitimacy to bring the parties to the negotiating table [14].
- **Oversee Revenue-Sharing:** The Peace and Security Council should oversee the revenue-sharing mechanism, ensuring transparency and accountability. This includes appointing auditors and investigating disputes [7].
- **Supervise Early Warning System:** The Peace and Security Council should supervise the entropy-based early warning system, using it to monitor conflict indicators and provide timely warnings.
- **Enforce Sanctions and Embargoes:** The Peace and Security Council should enforce arms embargoes and targeted sanctions, working with the UN Security Council to ensure compliance [24].
- **Support Reconstruction and Development:** The Peace and Security Council should support reconstruction and development, including by mobilizing resources and coordinating international efforts [12].

### Conclusion

Sudan's civil war has fundamentally altered the country's political geography, social fabric, and economic foundations, creating conditions that make state partition highly probable. The conflict between the RSF and SAF, exacerbated by proxy warfare, ethnic divisions, and the collapse of state institutions, has entrenched de facto partition and created catastrophic humanitarian conditions. As of late 2025, the RSF controls approximately 50% of the territory in the west (Darfur, Kordofan), while the SAF retains the east (Port Sudan, Gedaref, Northern/Nile states), with an Egypt buffer zone protecting the northern Nile.

The analysis in this paper demonstrates that continued stalemate is unsustainable, with continued violence, humanitarian catastrophe, and regional instability. Full partition would represent the worst outcome, leading to the creation of a Sahel terror hub and a humanitarian disaster of unprecedented proportions. The confederation model offers the best prospect for stability, economic recovery, and reduced terrorism risk, with a 65% probability of sustaining cohesion ( $H < 2.5$ ) if implemented by Q2 2026.

The game-theoretic analysis reveals that the conflict is characterized by a repeated prisoner's dilemma, with both sides having incentives to defect. The revenge parameter ( $r_t$ ) captures how grievances and atrocities increase spite, making cooperation less likely. Reducing the revenge parameter ( $r_t < 0.2$ ) and entropy ( $H < 2.5$ ) is essential for establishing stable governance and reducing terrorism recruitment.

The confederation framework provides a remedial pathway for Sudan's post-war governance. The framework comprises independent regional councils with 60% local revenue retention, joint security pacts, and a Peace and Security Council-supervised rotating presidency. The revenue-sharing mechanism, audited via blockchain, provides resources for reconstruction and development while maintaining a common pool for national-level functions. The implementation roadmap proceeds through four phases, from ceasefire (Q2 2026) to local elections and economic recovery (2028). The policy recommendations in this paper emphasize the need for international support for mediation, humanitarian assistance, and reconstruction, as well as regional coordination and the engagement of Sudanese stakeholders. The Peace and Security Council should play a leadership role in mediating the conflict, overseeing revenue-sharing, and supervising the early warning system.

The study's contribution to the conflict resolution literature is twofold. First, it formalizes the analysis of klepto-state dynamics, demonstrating how resource capture and predatory behavior shape conflict outcomes. Second, it equips conflict researchers with tools—including the game-theoretic model and entropy metrics—to analyze and mitigate the

linkages between confederation arrangements and terrorism risk.

Ultimately, Sudan's future depends on the willingness of its leaders and the international community to embrace pragmatism, compassion, and a vision of shared prosperity. The confederation framework is not a panacea, but it offers a viable pathway to stability in contexts where traditional unitary-state models have failed. The alternative—continued war, partition, and regional instability—is unacceptable for Sudan and the region.

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### **Declaration of Ethics**

This study was conducted in accordance with the Declaration of Helsinki. Ethical approval was obtained from the Institutional Review Board of the University of Science and Technology, Omdurman, Khartoum. Sudan. However, the study did not require ethical approval because it used publicly available, anonymized data with no human or animal subjects.

### **Declaration of Conflict of Interest**

**The author declares no competing interests.**

### **Declaration of AI Use**

- During the preparation of this work, the author used DeepSeek to improve language and readability. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the published article.
- The author used DeepSeek to assist with code generation for data analysis. All outputs were manually verified, and no AI was used to generate conclusions or interpret results.
- In accordance with the guidelines of the International Committee of Medical Journal Editors (ICMJE), the Committee on Publication Ethics (COPE), and the editorial policies of major peer-reviewed journals regarding the use of artificial intelligence (AI) tools in scholarly work, the author makes the following declaration: Nature and Scope of AI Use. An AI language model (Claude, developed by Anthropic) was used as an analytical and drafting assistant during the preparation of this manuscript. Specifically, AI assistance was employed in: (a) structuring the Geopolitical Conflict Matrix (GCM) framework and organizing the actor-resource scoring methodology; (b) drafting and refining prose across manuscript sections; (c) generating the interactive data visualization artifact accompanying this analysis; and (d) formatting and document production.
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