

South Sudan

South Sudan is highly vulnerable to climate change, including flooding, droughts and, most recently, a locust infestation. Long-term climate change, like a gradual increase in temperature, and short-term changes, like increased flooding, have indirect and interlinked implications for peace and security in South Sudan.

- Flooding and droughts significantly disrupt livelihood patterns and food-security and may result in temporary displacement or longer-term migration. Such shocks exacerbate vulnerabilities and weaken the resilience and adaptive capacity of agriculture-dependent communities; they can heighten competition over natural resources, sometimes leading to cattle raiding and communal conflict.
- Unpredictable annual variation and extreme weather events, like flooding and droughts, affect pastoralist mobility patterns and routes, and farmers' agricultural production. These changes may exacerbate tensions between herders and farmers, often in connection with land, grazing, water and communal conflicts.
- Female-headed households are especially vulnerable to the effects of climate change, as most depend on agriculture to sustain their families, and rely on natural resources like firewood and water.
- Climate-related livestock losses compound ongoing rivalries, increasing the risk of cattle raiding, which can trigger retaliations, communal conflicts, displacement and the growth of new or existing armed groups.

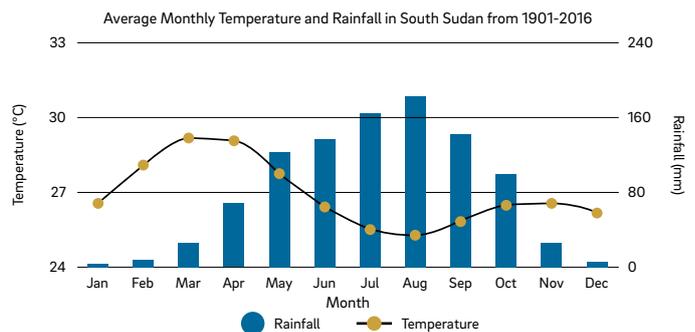
Ongoing conflict, governance deficits, insufficient resources, knowledge gaps and low technical expertise and support have weakened the ability of the Revitalised Transitional Government of National Unity of South Sudan to integrate climate-related security risks into its efforts to manage communal, natural resource and land conflicts. The Intergovernmental Authority on Development (IGAD), the African Union (AU) and the United Nations (UN) have all invested in increasing knowledge and expertise in the areas of climate, peace and security, and can further assist the Government to enhance its capacity to adapt to climate change and integrate climate-related security risks into its analyses, as well as its early-warning, prevention, mitigation and preparedness efforts.

RECOMMENDED ACTIONS:

- ▶ To improve early warning, prevention and early action, the UN Security Council (UNSC) should mandate the UN Mission in South Sudan (UNMISS) to support and build Government capacity to establish an early warning and emergency response centre, managed by the Government in conjunction with research institutions and experts in South Sudan, and with the partnership of the rest of the UN system, the AU and IGAD.
- ▶ The Government should consider strengthening its analytical capacity by bringing relevant stakeholders and partners together to produce regular climate-security reviews that integrate and analyse data on climate, conflict, migration (including transhumance patterns and routes) and food security. These reviews should pay special attention to women, girls and female-headed households, and should include women's interests and needs in conflict-sensitive climate adaptation and climate-related security risk strategies. The reviews should also feed into the annual South Sudan State of the Environment Report and work towards supporting the Government to mitigate the climate-security risks identified.
- ▶ To enhance the ability of the Government to prevent and manage climate-related security risks, UNMISS should support the Ministry of Environment and Forestry to maintain, upgrade and establish new weather stations throughout the country, and build capacity to store and analyse the data, in collaboration with the University of Juba or other research institutions. IGAD's Climate Prediction and Applications Centre (ICPAC) and the World Meteorological Organization (WMO) could be key technical partners in this process.
- ▶ The UNSC should authorise the deployment of a senior UN Environmental Programme (UNEP) climate-security advisor to UNMISS to advise the mission leadership on climate-related security risks and to support the efforts of the Government's climate-security working group. UNMISS and the UN system should coordinate closely with relevant government ministries and other institutions in South Sudan, and draw on South Sudanese expertise to inform its work in this area.
- ▶ The UNSC should request the UN Secretary-General to take the steps necessary to guarantee the provision of adequate training for UN personnel to assess and respond to climate-related security risks. UNMISS and the UN system should invest in training their personnel in South Sudan especially in the areas of joint assessments, integrated analysis and planning, as well as the gendered effects of climate stress, and preventing and resolving communal and transhumance-related conflict.

- Long-term projected temperature increase: 1°C – 1.5°C (2060)
- Aridification, shrinking wetlands & river flows
- Rainfall variability & flood risk increase
- Agriculture dependence: 83 per cent (2018)
- IDPs: 1.47 million (2020)

- Human Development Index: 0.433 / 1.0 (2020)
- Population: 11 million (2019)
- Food insecure: 6.4 million (2020)
- Global Peace Index score 3.45 / 5 (2020)
The Global Peace index measures the peacefulness of countries by using a range of indicators each weighted on a scale of 1 (most peaceful) to 5 (least peaceful).



Sources: UNDP (2020) Human Development Report; UNHCR (2019) South Sudan Situation https://reporting.unhcr.org/sites/default/files/UNHCR%20South%20Sudan%20Situation%20Regional%20Update%20-%20December%202019_0.pdf; USAID (2019) South Sudan Climate Vulnerability Profile: Sector- and location-specific climate risks and resilience recommendations <https://www.climatelinks.org/resources/south-sudan-climate-vulnerability-profile-sector-and-location-specific-climate-risks-and>; Vision of Humanity (2020) Global Peace Index. <https://www.visionof-humanity.org/maps/#/>; WFP (2020) WFP South Sudan Country Brief October 2020; World Bank (2019) South Sudan: Linking the Agriculture and Food Sector to the Job Creation Agenda; World Bank (n.d.) South Sudan. Climate Change Knowledge Portal. <https://climateknowledgeportal.worldbank.org/country/south-sudan>

Climate Exposure: Trends and Projections

South Sudan is experiencing the effects of long-term climate change, such as increased temperatures and precipitation change, as well as short-term changes, like more frequent droughts and floods.

Temperature: Mean annual temperatures across South Sudan have varied between 26 °C and 32 °C over the past 30 years, with an increase of 0.4 °C every decade.¹ The average temperature is projected to increase between 1 °C and 1.5 °C by 2060, leading to a warmer and drier climate.²

Precipitation: In the last 20 years, rainfall in South Sudan has been erratic (see online annex),¹ with wetter-than-normal rainy seasons (blue) and drier-than-normal rainy seasons (red). Summer rainfall has decreased by 15–20 per cent,² particularly in the north-east, whereas other regions experienced flooding in 2019³ and 2020.⁴ Consensus is lacking on long-term precipitation trends for the country, although recent data indicate reductions in rainfall;⁵ however there is broad consensus that heavy rains may occur more often and with greater intensity, increasing the risk of flooding.⁶

Socio-ecological Vulnerabilities

With approximately 95 per cent of the population dependent on climate-sensitive livelihoods like traditional rainfed agriculture, crop farming, pastoralism and animal husbandry, South Sudan is highly vulnerable to the impacts of climate change; like the erratic rainy season.⁷ Soil and water conditions are relatively favourable for agriculture and related activities⁸ – but, even in good harvest years, 20 per cent of the population suffer food insecurity, mainly because of ongoing conflict.⁹ In 2020, a severe locust invasion destroyed crops, with knock-on effects for food insecurity in 2021, when infestations are expected.¹⁰ With few alternative sources of energy, more than 95 per cent of the population depend on charcoal, firewood and grass for cooking, which contributes to rapid deforestation – between 1.5–2 per cent each year.¹¹ With a

temperature increase of 2 °C, water levels could fall by 50 per cent, disrupting the flow of the Bahr el Ghazal and Sobat rivers and negatively affecting local communities and natural resources.¹²

Climate-related Peace and Security Risks

Climate change and its effects can impact peace and security. While there is no direct causal relationship between climate and conflict, research has identified multiple pathways through which climate-related change interacts with political, social and environmental stresses to compound existing vulnerabilities and tensions.¹³ This can undermine development gains, impact the dynamics of ongoing violence or disrupt fragile peace processes. In turn, violent conflict and political instability undermine the resilience of communities and governments to cope with the effects of climate change.

This fact sheet uses four pathways to navigate the complex relationship between climate, peace and security: (1) livelihood deterioration, (2) migration and mobility, (3) military and armed actors, and (4) political and economic exploitation.¹⁴

Livelihood Deterioration

Climate change exacerbates existing vulnerabilities and grievances, which can increase the risk of cattle raiding, looting and communal conflict. Droughts and floods have impacted food security and livelihoods in South Sudan by contributing to resource scarcity. This can increase competition between communities, for example pastoralists and farmers who compete for grazing land¹⁵ and water resources.¹⁶ Climate variability can also affect the availability and distribution of these resources. Studies of land-cover in the Sudd wetland find that regions with high seasonal variability of grazing and water resources are situated adjacent to or between areas with high conflict density, close to boundaries between conflicting ethnic groups. There is some evidence that these areas have a higher incidence of communal conflict and of cattle raiding, particularly

on the Warrap and Unity state boundary.¹⁷ Climate change could place additional pressure on communities.

South Sudan’s vulnerability to climate change is linked to food insecurity, which is driven by long-standing conflict but also by droughts and floods, all of which weaken community resilience.¹⁸ The UNMISS Independent Strategic Review noted that civilians have been driven away from agriculture due to environmental and conflict factors, with significant effects on livelihood and food security.¹⁹ Conflict, displacement and economic collapse have also meant that farmers are less likely to invest

Key livelihood and labour cycles in South Sudan’s seasonal calendar

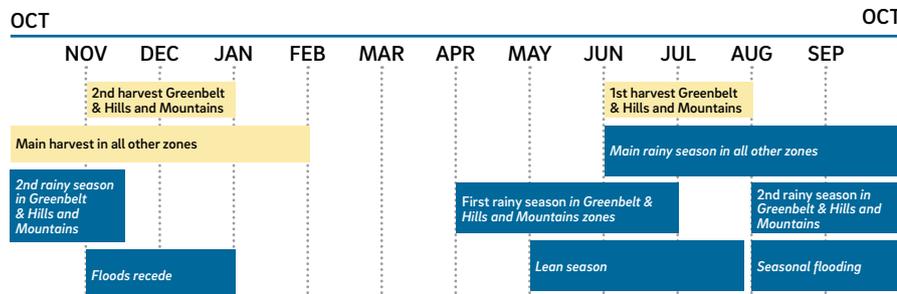


Figure 1. Source: Famine Early Warning Systems Network, <https://fews.net/file/113531>

¹ See online graphic: https://www.dropbox.com/s/i1eci4xwubhur2/Annex%201.%20_South%20Sudan_rainfall_anom.pdf?dl=0 South Sudan rainfall anomalies 2000–2020. Red indicates lower-than-average rainfall; blue shows above-average rainfall. Source: FEWS NET, NASA Land Data Assimilation System (FLDAS). Credit: Stefan Döring.

² Ministry of Environment, 2016.

³ UNICEF (2019, Oct. 25). 490,000 children affected by floods. <https://www.unicef.org/press-releases/490000-children-affected-devastating-floods-south-sudan>

⁴ Ministry of Environment, 2016; Funk, C., Eilerts, G., Verdin, J., Rowland, J. & Marshall, M. (2011). A Climate Trend Analysis of Sudan (Famine Early Warning Systems Network—Informing Climate Change Adaptation Series, Fact Sheet 2011-3072). https://www.researchgate.net/publication/259841875_A_Climate_Trend_Analysis_of_Sudan

⁵ Ministry of Environment, 2016; Quinn et al., 2019

⁶ Quinn et al., 2019; Krampe, F., Van de Goor, L., Barnhoorn, A., Smith, E. & Smith, D. (2020). Water Security and Governance in the Horn of Africa (SIPRI Policy Paper No. 54). https://www.sipri.org/sites/default/files/2020-03/sipripp54_0.pdf

⁷ African Development Bank. (2018). National Climate Change Profile: South Sudan. https://www.afdb.org/sites/default/files/documents/publications/afdb_south_sudan_final_2018_english.pdf

⁸ See online graphic: https://www.dropbox.com/s/i1eci4xwubhur2/Annex%201.%20_South%20Sudan_rainfall_anom.pdf?dl=0 ; (2021). Republic of South Sudan Intended Nationally Determined Contribution (Draft). <https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/South%20Sudan/1/South%20Sudan%20Intended%20Nationally%20Determined%20%20%20%20%20Contribution.pdf>

⁹ Diao, X., Thurlow, J., Benin, S. & Fan, S. (2012). Strategies for African agriculture: Economywide perspectives from country studies. <http://dx.doi.org/10.2499/9780896291959>

¹⁰ FAO (2020). Early Warning Early Action Report on Food Security and Agriculture (January–March 2020). https://reliefweb.int/sites/reliefweb.int/files/resources/ca7557en_0.pdf

¹⁰ WFP East Africa (2020, June 12) Update on the Desert Locust Outbreak. <https://reliefweb.int/sites/reliefweb.int/files/resources/WFP%20East%20Africa%20Locust%20Update%2012%20June%202020.pdf>; UNSC. (2020). Report on the independent strategic review of the United Nations Mission in South Sudan pursuant to Security Council resolution 2514 (2020) (S/2020/1224). <https://reliefweb.int/report/south-sudan/report-independent-strategic-review-united-nations-mission-south-sudan-pursuant>; This recent independent UN assessment of UNMISS also notes how food insecurity in South Sudan is mainly a result of human action, as cycles of violence make it difficult for communities to cultivate and harvest the land.

¹¹ UNEP (2018). South Sudan: First State of Environment and Outlook Report 2018. https://wedocs.unep.org/bitstream/handle/20.500.11822/25528/SouthSudan_SoE2018.pdf?sequence=1&isAllowed=y Ministry of Environment, 2016.

¹² Van Baalen, S., & Mobjörk, M. (2017). Climate change and violent conflict in East Africa: Integrating qualitative and quantitative research to probe the mechanisms, *International Studies Review* 20(4), pp. 547–575. doi.org/10.1093/isr/vix043

¹³ Mobjörk, M., Krampe, F. & Tarif, K. (2020). Pathways of Climate Insecurity: Guidance for Policymakers. <https://www.sipri.org/publications/2020/sipri-policy-briefs/pathways-climate-insecurity-guidance-policymakers>

¹⁴ UNSC, 2020.

¹⁵ Pendle, N. R. (2020). The ‘Nuer of Dinka money’ and the demands of the dead: contesting the moral limits of monetised politics in South Sudan, *Conflict, Security and Development*, 20(5), pp. 587–605. doi.org/10.1080/14678802.2020.1820161

¹⁶ Sosnowski, A., Ghoneim, E., Burke, J.J., Hines, E. & Halls, J. (2016) Remote regions, remote data: A spatial investigation of precipitation, dynamic land covers, and conflict in the Sudd wetland of South Sudan, *Applied Geography* 69, pp. 51–64. doi.org/10.1016/j.apgeog.2016.02.007

¹⁷ Quinn et al., 2019; FEWS NET (2020, Sep.) Severe flooding, conflict, and macroeconomic crisis drive Emergency (IPC Phase 4) and high assistance needs. <https://fews.net/east-africa/south-sudan/key-message-update/september-2020>

in building climate-resilient livelihoods, leaving them more exposed to environmental shocks.²⁰

Both long- and short-term climate-related changes affect transhumance mobility patterns. Traditional gender roles mean that men and boys move with livestock, explore migratory adaptation options or join armed groups or raiding parties. Evidence shows that female-led households, women and girls are particularly exposed to climate impacts. Women depend on farming to sustain their families and rely heavily on natural resources like firewood and water, which exposes them to risks like sexual violence.²¹ Women also face structural disadvantages, with child marriage and low social status, leaving them with fewer resources and adaptation possibilities.²² On the other hand, societal changes may also disrupt traditional systems, create space for new gender roles to emerge, and provide opportunities to build gender-inclusive communities through policies that address the disproportionate impacts of climate change on women.

The Government of South Sudan and its partners should build the capacity of newly appointed state and deputy governors, local leaders and national agencies to anticipate and adapt to climate-related change, seasonal shocks and livelihood and food-security stressors by strengthening early warning, joint planning and rapid response mechanisms. International partners should increase support to integrated, climate-sensitive disaster risk reduction efforts by strengthening Government capacities in hydro-meteorological observatory networks, flood and drought mapping capability (forecasting and post-event damage assessment), early warning messaging and supporting community adaptation measures.

Migration and Mobility

Climate change can interact with migration and mobility in diverse ways, including displacement caused by extreme weather and altered mobility patterns due to changing seasonal weather systems. As of March 2021, over 1.6 million South Sudanese are internally displaced by factors including conflict and weather, placing strain on host communities and humanitarian support to vulnerable groups.²³

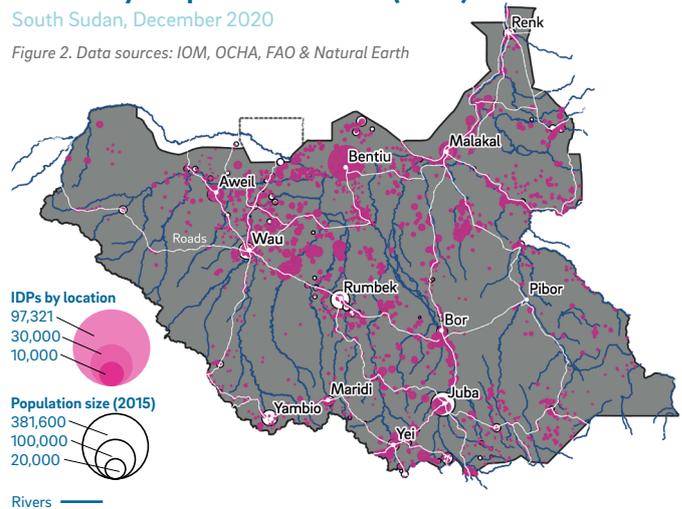
There is evidence that climate change increases the risk of floods and droughts, triggering temporary, or more permanent, population displacements. South Sudan has a history of flooding,²⁴ but localised floods have become more frequent.²⁵ Over 700 000 were affected by severe flooding in the Jonglei and Eastern Nile states in 2020.²⁶ The floods destroyed crops and displaced almost 85 000 people in Jonglei, in what the World Food Programme (WFP) described as the worst flooding in 60 years.²⁷ Resulting displacement eroded community resilience and governance capacities to respond.

The impact of climate change on seasonal patterns affects transhumant pastoralists, increasing the risk of tensions with farmers over access to water and grazing. In 2020, flooding in Jonglei, Eastern Lakes and

Internally Displaced Persons (IDPs)

South Sudan, December 2020

Figure 2. Data sources: IOM, OCHA, FAO & Natural Earth



Terekka forced migration along new routes into Equatoria regions,²⁸ impacting nomadic as well as host communities.²⁹ Heavy rainfall can also make the Sudd wetlands unsuitable for cattle, forcing herders to migrate out, bringing them into competition with neighbouring communities.³⁰ Pibor, Lakes, Tonj, Jonglei and Warrap states have experienced upsurges in local communal violence due to resource conflicts, disrupting the country's fragile social fabric.³¹ These instances show how changing seasonal patterns can affect pastoralists' mobility options, and how climate-related stress can increase the risk of tensions and impact existing conflicts.

Climate-related influences on agriculture, prolonged conflict and its economic consequences have spurred greater rural-urban migration, especially to South Sudan's capital, Juba. Migrants look for employment, livelihood options, health services and education, but migration has led to urban overcrowding, increasing the risk that grievances among urban migrants could escalate into violence.³² South Sudan's national and local capacity to mitigate and adapt to climate-related security risks is limited. The Ministry of Environment and South Sudan Meteorological Department (SSMD) lack the resources, knowledge and technical expertise to generate robust early warning data and analysis.³³

Military and Armed Actors

The 2018 Revitalised Agreement on the Resolution of the Conflict in the Republic of South Sudan (R-ARCSS) brought relative stability to the country,³⁴ but delays in implementation and clashes continue to affect several regions.³⁵ Under certain circumstances, local climate stress can feed national political instability and conflicts, as in the Pibor, Tonj, Wu and Upper Nile regions.³⁶

¹⁹ UNSC, 2020.
²⁰ Quinn et al., 2019; Omondi, P. & Vhurumuku, E. (2014) Climate Risk and Food Security in South Sudan: Analysis of Climate Impacts on Food Security and Livelihoods. <https://docs.wfp.org/api/documents/WFP-0000013228/download/> Ministry of Environment, 2016.
²¹ Mai, N.J.H., Jok, J.M., & Tiitmamer, N. (2018, 1 Aug.). Climate change and gender in South Sudan, AfricaPortal. <https://www.africaportal.org/publications/climate-change-and-gender-south-sudan/>; Chamberlain, G. (2017, 8 June). South Sudan's battle for cattle is forcing schoolgirls to become teenage brides. The Guardian. <https://www.theguardian.com/global-development/2017/jun/08/south-sudan-battle-for-cattle-is-forcing-schoolgirls-to-become-teenage-brides>
²² UNHCR (2020). South Sudan. UNHCR Operations Worldwide. https://reporting.unhcr.org/node/2553#_ga=2.112682180.1586337247.1613729599-505960129.1613729599
²⁴ UNEP (2007). Sudan Post-Conflict Environment Assessment. https://postconflict.unep.ch/publications/UNEP_Sudan.pdf
²⁵ OCHA (2019). Humanitarian Data Exchange. HDX. <https://data.humdata.org/dataset/south-sudan-flood-locations/resource/7c454f75-ea6e-4361-98ab-e12baa31cb20>
²⁶ UNHCR (2020, 6 Oct.). Massive floods in Sudan impacts thousands of refugees. <https://www.unhcr.org/th/en/22045-massive-floods-in-sudan-impact-thousands-of-refugees.html>
²⁷ UN News (2020, 29 Sep.). Flooding leaves South Sudan facing threat of 'catastrophic' hunger levels. <https://news.un.org/en/story/2020/09/1074152>
²⁸ OCHA (2019). Humanitarian Needs Overview: South Sudan (Humanitarian Programme Cycle 2020). <https://reliefweb.int/report/south-sudan/south-sudan-humanitarian-needs-overview-2020-november-2019>

²⁹ BRACED (2018). Building Climate Resilience in Fragile Contexts: Key Findings of BRACED Research in South Sudan. <https://reliefweb.int/report/south-sudan/building-climate-resilience-fragile-contexts-key-findings-braced-research-south>
³⁰ Raleigh, C. & Kniveton, D. (2012). Come rain or shine: An analysis of conflict and climate-related change in East Africa, Journal of Peace Research 49(1), pp. 51-64. <https://doi.org/10.1177/0022343311427754>
³¹ ICG. (2014). South Sudan: Jonglei - 'We Have Always Been at War' (Africa Report No. 221). <https://www.refworld.org/pdfid/54991c5e4.pdf>; Tiitmamer, 2020.
³² Moses, L.A.B., Guogping, X. & John, L.C.L. (2017). Causes and consequences of rural-urban migration: The case of Juba Metropolitan, Republic of South Sudan, IOP Conference Series: Earth and Environmental Science 81. <https://doi.org/10.1088/1755-1315/81/1/012130>; Koubi, V., Nguyen, Q., Spilker, G., & Böhmelt, T. (2021). Environmental migrants and social-movement participation, Journal of Peace Research, 58(1), pp. 18-32. <https://doi.org/10.1177/0022343320972153>
³³ Tiitmamer, N. (2015). Assessment of Policy and Institutional Responses to Climate Change and Environmental Disaster Risks in South Sudan. https://www.preventionweb.net/files/44145_climatechangeitiitmamer.pdf
³⁴ IGAD (2018, 12 September) Revitalised Agreement on the Resolution of the Conflict in the Republic of South Sudan (R-ARCSS). <https://www.dropbox.com/s/6dn3477q3f5472d/R-ARCSS.2018-i.pdf?dl=0>
³⁵ WFP (2020). South Sudan Country Brief. https://docs.wfp.org/api/documents/WFP-0000121080/download/?_ga=2.13764279.1081117744.1610663618-1837009555.1610663618
³⁶ Rüttinger, L., Smith, D., Stang, G., Tänzler, D., Vivekananda, J. et al. (2015). A New Climate for Peace - Taking Action on Climate and Fragility Risks. <https://www.newclimateforpeace.org/>

The involvement of armed civil defence groups in subnational violence reflects the growing militarisation of communal conflicts and increases the risk that resource conflicts become more deadly and harder to resolve through local dispute resolution. UNMISS reported witnessing 415 violent incidents between communities from January and May 2020, and data from 2019 also show escalating violence involving the Dinka, Nuer and Murle communities in Jonglei.³⁷ This violence also weakens communities' resilience to the adverse effects of climate change.³⁸

The Food and Agricultural Organization (FAO) has warned that South Sudan lacks effective state institutions and local mechanisms for the peaceful settlement of disputes over power, livestock and resources.³⁹ UNMISS, the AU, IGAD, the UN system and international partners should increase and coordinate support to national and local authorities and civil society, to help build sustainable local and national capacities for peace.

Political and Economic Exploitation

In South Sudan, communal and ethnic conflicts are closely linked to broader political dynamics, increasing the risk that local conflicts become more violent and harder to resolve. Climate change can exacerbate these tensions with the added risk that powerful groups may use adverse climate impacts for their own ends.⁴⁰

Before and since South Sudan's independence, political leaders and elites have accumulated wealth from cattle, making many complicit in cattle-related conflicts and resource exploitation.⁴¹ Elites have an incentive to maintain if not expand cattle farming, but climate-related stress, raiding practices and the civil war have inflated livestock prices to the extent that they affect the livelihood opportunities of pastoralists and agro-pastoralists, and negatively impact ordinary people.⁴² This disparity shows how the unequal impacts of climate change could feed grievances towards elites.

Climate impacts in South Sudan are also exacerbated by human actions like deforestation, illegal timber exports and charcoal production, which is a lucrative business for armed groups, communities and affiliated political elites.⁴³ In the Equatoria regions, unregulated charcoal production involving soldiers from the South Sudan People's Defence Forces (SSPDF) has expanded along the Juba-Bor road, and illegal logging was documented around the Southern National Park, Lantoto National Park, Western Equatoria and Yambio in 2016.⁴⁴

Intercommunal Violence & Livelihood Zones

South Sudan, 2011-2020

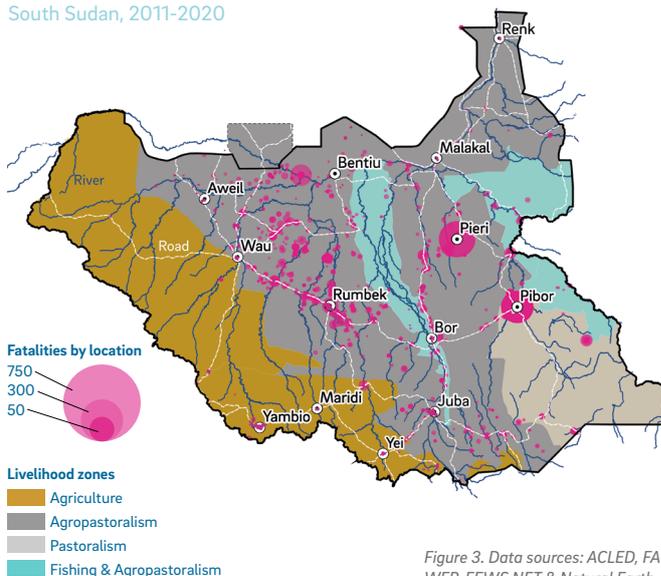


Figure 3. Data sources: ACLED, FAO, WFP, FEWS NET & Natural Earth

There is evidence that political and communal militias active in the civil war are linked to increasing farmer-herder violence, which weakens resilience to the adverse effects of climate change and opportunities for adaptation.⁴⁵ Research indicates that political leadership deficits and economic mismanagement have played a key role in South Sudan's water-related and other resource conflicts, highlighting the importance of climate-sensitive development.⁴⁶ Environmental peacebuilding initiatives can strengthen community resilience – especially among women and youth – and sustain peace. However, low capacity, unclear roles and responsibilities for local government and customary authorities, and Government absence have often impeded the design of lasting solutions for local resource conflicts. The Government and its partners need mechanisms for systematically gathering and analysing data, and assessing climate, livelihoods, food security, migration (including transhumance) and conflict trends, to be better positioned to generate early warning information and anticipatory preventive responses.

³⁷ UNMISS (2020, 9 June). Escalating Intercommunal Conflict Could Unravel the Peace Agreement. <https://unmiss.unmissions.org/escalating-intercommunal-conflict-could-unravel-peace-agreement>

³⁸ UN DPO (2020). Preventing, Mitigating & Resolving Transhumance-Related Conflicts in UN Peacekeeping Settings: A Survey of Practice. https://peacekeeping.un.org/sites/default/files/transhumance_and_un_pkos_final_web.pdf

³⁹ FAO (2016). South Sudan Resilience Strategy 2016–2018. <http://www.fao.org/3/a-i5760e.pdf>; Tchier, A.E.Y. (2019, 17 Nov.). Why South Sudan's attempts at peace continue to fail. The Conversation. <https://theconversation.com/why-south-sudans-attempts-at-peace-continue-to-fail-126846>

⁴⁰ Van Baalen & Mobjörk, 2017; Nordqvist, P., & Krampe, F. (2018). Climate change and violent conflict: Sparse evidence from South Asia and South East Asia (SIPRI Insights on Peace and Security, No. 2018/4). <https://www.sipri.org/sites/default/files/2018-09/sipriinsight1804.pdf>

⁴¹ The Sentry (2016). War crimes shouldn't pay: Stopping the looting and destruction in South Sudan. https://cdn.thesentry.org/wp-content/uploads/2016/09/Sentry_WCSP_Finalx.pdf

⁴² Idris, I. (2018). Livestock and Conflict in South Sudan. https://assets.publishing.service.gov.uk/media/5c6abdec40f0b61a22792fd5/484_Livestock_and_Conflict_in_South_Sudan.pdf

⁴³ Mosel, I. & Henderson, E. (2015). Markets in Crises: South Sudan Case Study (HPG Working Paper). <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9920.pdf>

⁴⁴ Radio Tamazuj. (2016). War brings devastating assault on South Sudan's wildlife. <https://radiotamazuj.org/en/news/article/war-brings-devastating-assault-on-south-sudan-s-wildlife>; An official (interview, 5 March 2021) confirmed that the SSPDF soldiers use charcoal production to supplement their income, due to factors including late payment of salaries and low levels of remuneration.

⁴⁵ Gebreyes, Y.A. et al. (2016) The Impact of Conflict on the Livestock Sector in South Sudan. https://assessments.hpc.tools/sites/default/files/assessments/the_impact_of_conflict_on_the_livestock_sector_in_south_sudan.pdf

⁴⁶ Selby, J. & Hoffmann, C. (2014) Beyond scarcity: Rethinking water, climate change and conflict in the Sudans, *Global Environmental Change* 29, pp. 360–370. doi.org/10.1016/j.gloenvcha.2014.01.008

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The Climate-related Peace and Security Risk project aims to generate reliable, relevant, timely and actionable information and analysis on climate-related peace and security risks for selected countries and regions on the UN Security Council agenda.

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