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How does climate exacerbate root causes of conflict in **Senegal**?

An impact pathway analysis

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This factsheet gives answers on how climate exacerbates root causes of conflict in Senegal, using an impact pathway analysis. Two main impact pathways are identified:

- 1. Livelihood and food insecurity in Matam and Tambacounda:** Projected increases in temperatures and declines in precipitations are likely to adversely impact existing natural resources and undermine climate-sensitive livelihoods in the Eastern provinces of Matam and Tambacounda, incrementing the sense of abandonment by the central government and increasing the prospects for the recruitment by NSAGs;
- 2. Fish scarcity, livelihood insecurity and recruitment by NSAGs:** The negative impact of the climate crisis on marine ecosystems and fish stocks can compound food insecurity, poverty and unemployment of people dependent on the fishing industry, increasing the prospects for the recruitment of NSAGs.

This publication is part of a factsheet series reporting on the findings of the CGIAR FOCUS Climate Security Observatory work in Africa (Kenya, Mali, Nigeria, Senegal, Sudan, Uganda, Zimbabwe). The research is centered around 5 questions*:

1 How does climate exacerbate root causes of conflict?

Impact pathways

[Kenya](#) [Mali](#) [Nigeria](#) [Senegal](#) [Sudan](#) [Uganda](#) [Zimbabwe](#)

Econometric analysis

[Kenya](#) [Mali](#) [Nigeria](#) [Senegal](#) [Sudan](#) [Uganda](#) [Zimbabwe](#)

[Scopus analysis**](#)

2 Where are the climate insecurities hotspots?

Spatial analysis

[Kenya](#) [Mali](#) [Nigeria](#) [Senegal](#) [Sudan](#) [Uganda](#) [Zimbabwe](#)

3 What is the underlying structure of the climate, conflict, and socio-economic system?

Network analysis

[Kenya](#) [Mali](#) [Nigeria](#) [Senegal](#) [Sudan](#) [Uganda](#) [Zimbabwe](#)

4 Are climate and security policies coherent and integrated?

[Policy coherence analysis](#)

5 Are policy makers aware of the climate security nexus?

Social media analysis

[Kenya](#) [Mali](#) [Nigeria](#) [Senegal](#) [Sudan](#) [Uganda](#) [Zimbabwe](#)



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* Questions 1, 2, 3, 5 are analyzed at country level through a Climate Risk Lens (impact pathways, economic, spatial, network and social media analyses). The policy coherence and scopus analyses are at continental level.

**Scopus is one of the largest curated abstract and citation databases, with a wide global and regional coverage of scientific journals, conference proceedings, and books. We used Scopus data for analyzing: (1) how global climate research addresses the dynamics between climate, socio-economic factors, and conflict, and (2) how the countries studied are represented in the database.

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PATHWAY#1:

Livelihood and food insecurity in Matam and Tambacounda

The Eastern provinces of Matam and Tambacounda are among the poorest and most food-insecure regions of the country. They are also among the most vulnerable to the effects of the climate crisis as most of their population relies on climate-sensitive livelihoods. The climate crisis will impact existing natural resources, exacerbating pre-existing vulnerabilities and undermining climate-sensitive livelihoods. Livelihood insecurity can, in turn, increment the sense of abandonment by the central government, increasing radicalisation and paving the way for the recruitment by non-state armed groups (NSAGs).

PATHWAY#2:

Fish scarcity, livelihood insecurity and recruitment by NSAGs

Fishery is one of the main industries in Senegal. The climate crisis is contributing to the degradation of marine ecosystems and the overall decrease in fish availability, exacerbating existing socio-economic vulnerabilities such as food insecurity, poverty, and unemployment of the people whose livelihood is linked to the fishing industry. The lack of jobs and alternative economic opportunities can increase the recruitment of young Senegalese into NSAGs.

1. OBJECTIVE AND RESEARCH QUESTIONS

The Impact Pathway Analysis (IPA) aims to identify, describe, and represent the complex and non-linear interactions between climate, conflict, and existing vulnerabilities and risks with a special focus on food, land, and water systems. In particular, the IPA intends to address the following questions:

- What are the potential climate security pathways through which climate may act as a threat multiplier?
- Which specific vulnerabilities and risks, that are at the heart of insecurity and conflict, may be exacerbated by the climate crisis?
- How can dimensions such as natural resources, livelihoods, mobility, governance and food, land, and water systems, inform climate security pathways in specific contexts?

2. METHODS AND DATA

The IPA follows a systematic literature search and review to find, collate, analyze and synthesize insights from relevant knowledge products, including reports, policy briefs, fact sheets from grey literature, as well as books, journal articles, and other sources of documented evidence in academic literature and public media. The construction of a narrative is then followed by consultation with a designated set of experts and stakeholders through interviews and written feedback to gather evaluation and incorporate suggested revisions.

3. RESULTS

3.1 Climate exposure and vulnerability

Senegal is part of the Sahel, one of the most climate-vulnerable regions in the world. Senegal is highly vulnerable to climate disruptions while having a low level of readiness (University of Notre Dame 2019). It suffers from both slow and rapid onset events such as droughts, floods, coastal erosion, and sea-level rise (The World Bank Group 2011). Projections say that climate in Senegal will become more erratic and that the country will witness an increase in average temperatures between 1.1 and 1.8°C by 2030 (Ministère de l'Environnement et du Développement Durable 2015b). Historical trends show a sea-level rise of 1.4mm per year and some projections estimate a rise of up to one meter by 2100. While projections agree that heavy rainfall events will increment, there is no consensus on whether annual rainfall will increase or decrease (Ministère de l'Environnement et du Développement Durable 2015a; The World Bank Group 2011). Other extreme weather events such as droughts and floods will also increase in frequency (The World Bank Group 2011). These climate stressors are likely to burden Senegal's economy and society which are highly dependent on climate-sensitive sectors such as agriculture, livestock, and fisheries that employ more than 70% of the workforce and contribute to 13.6% of the GDP (Ministère de l'Environnement et du Développement Durable 2015a; 2015b; Jalloh et al. 2017). 70% of Senegalese agriculture is rainfed which makes it extremely vulnerable to changes in climate (USAID 2017a). Some estimates project that the main crops, including maize, millet, sorghum, and groundnuts, will see their yields reduced (USAID 2017a). The livestock sector will also be affected by the reduction in the production and quality of fodder due to decreased water availability. This, in turn, may threaten the life of the herds and burden meat and milk production (Ministere de l'Environnement et de la Protection de la Nature 2006).

3.2 Socio-economic and political insecurity

According to the main peace and security indicators, Senegal is the most peaceful country of the Sahel (Institute of Economics & Peace 2021) and one of the most stable in the African continent (The Fund For Peace 2020). Since achieving its independence, Senegal has had relatively stable civilian governments with peaceful transitions of power (BBC 2018; World Bank 2021). However, it has several socio-economic and political vulnerabilities and security risks that could threaten this stability. The country has the current longest armed conflict in Africa which, despite having evolved into a low-intensity war in the last decade, is still a source of instability in southern Senegal. Since 1982 the conflict in Casamance has confronted the Movement of Democratic Forces of Casamance (MFDC), who fights for the independence of the region, and the Senegalese government. The war has resulted in 5,000 deaths and thousands of forced migrants and, in the last two decades has been increasingly intertwined with illicit economies including timber and cannabis trafficking (Madurga López 2021; Foucher 2019).

Despite being one of the few countries in which radical Islamic terrorism is not a salient issue and has never suffered a terrorist attack of that nature, in the last few years there has been an incipient jihadist activity. Several terrorist groups have tried to expand their influence in Senegal and even tried to establish terrorist cells in the province of Tambacounda (Pujol-Mazzini 2018; Counter Extremism Project 2020). Other security risks include human trafficking involving smuggling migrants towards Europe as well as *talibé* children that are used for forced labour such as forced begging (Kane 2020b;

HRW 2019). Drug trafficking is an increasingly relevant issue with strong implications for security. In recent years the trafficking of cocaine coming from Latin America has increased in West Africa – including Senegal – taking advantage of its geography and the freedom of cross-border movement among the ECOWAS (Economic Community of West African States) countries (Bird 2021; Kane 2020a).

Poverty is a serious concern among Senegal's socio-economic insecurities. 43% of the people are poor in urban areas and 58% in rural areas. This shows a noticeable inequality between rural and urban areas that can also be seen in food security rates. A total of 8% of urban households suffer from food insecurity while around 15% of the rural households are food insecure. Without any adaptation policies, climate change and variability may exacerbate these issues, leading to environmental degradation, natural resource scarcity, and even conflict (National Agency for Civil Aviation and Meteorology of Senegal (ANACIM) et al. 2013).

3.3 Climate security pathways

The combined effect of a rise in temperatures and rainfall variability linked to the climate crisis is likely to increase droughts, undermine agricultural production and productivity, and increase poverty and food insecurity (USAID 2011; Ministère de l'Environnement et du Développement Durable 2015b; Ministère de l'Environnement et de la Protection de la Nature 2006). These impacts of climate on existing socio-economic vulnerabilities could exacerbate existing risks and tensions and contribute to instability and insecurity through multiple pathways (Figure 1).

PATHWAY #1: Livelihood and food insecurity in Matam and Tambacounda

The Eastern provinces of Matam and Tambacounda are two of the main peripheral regions which, distant from the capital and the main coastal urban centres, have been historically marginalised during colonial and post-colonial times (Ninot 2003; Grechi and Agustoni 2019; Sakho 2005). They are both among the poorest regions of the country with all of its departments having poverty rates higher than 50%, including in Ranérou, the department with the highest poverty rate in Senegal (94%). Food insecurity is also present in both provinces with 10 to 21% of the households being food insecure (National Agency for Civil Aviation and Meteorology of Senegal (ANACIM) et al. 2013).

Other local vulnerabilities include the lack of access to markets, youth unemployment, youth disaffection, lack of access to natural resources, and rising disputes between farmers and herders. A visible outcome of these dynamics is the migration towards the main urban centres of the country as well as the increasing number of people – especially youth – engaging in illicit activities such as poaching, drug and human trafficking, and banditry (National Agency for Civil Aviation and Meteorology of Senegal (ANACIM) et al. 2013; USAID 2017b). Matam and Tambacounda are particularly vulnerable to the threat of Islamic radicalism and there is a risk of violent extremism (USAID 2017b). Several terrorist groups have tried to expand their influence in Senegal and even tried to establish terrorist cells in the province of Tambacounda (Counter Extremism Project 2020; Pujol-Mazzini 2018; Chair of the Security Council Committee 2021). Some jihadist groups such as Ansar Dine have reportedly recruited Senegalese people for their operations in Mali (Moniquet 2013). The expansion of Salafism since the 1990s with the growing influence of Saudi-funded associations and mosques is an important factor to consider. While Salafism is a very heterogeneous movement, its political version is linked to militant jihad that goes against Senegalese secular and peaceful values. Even if Salafism

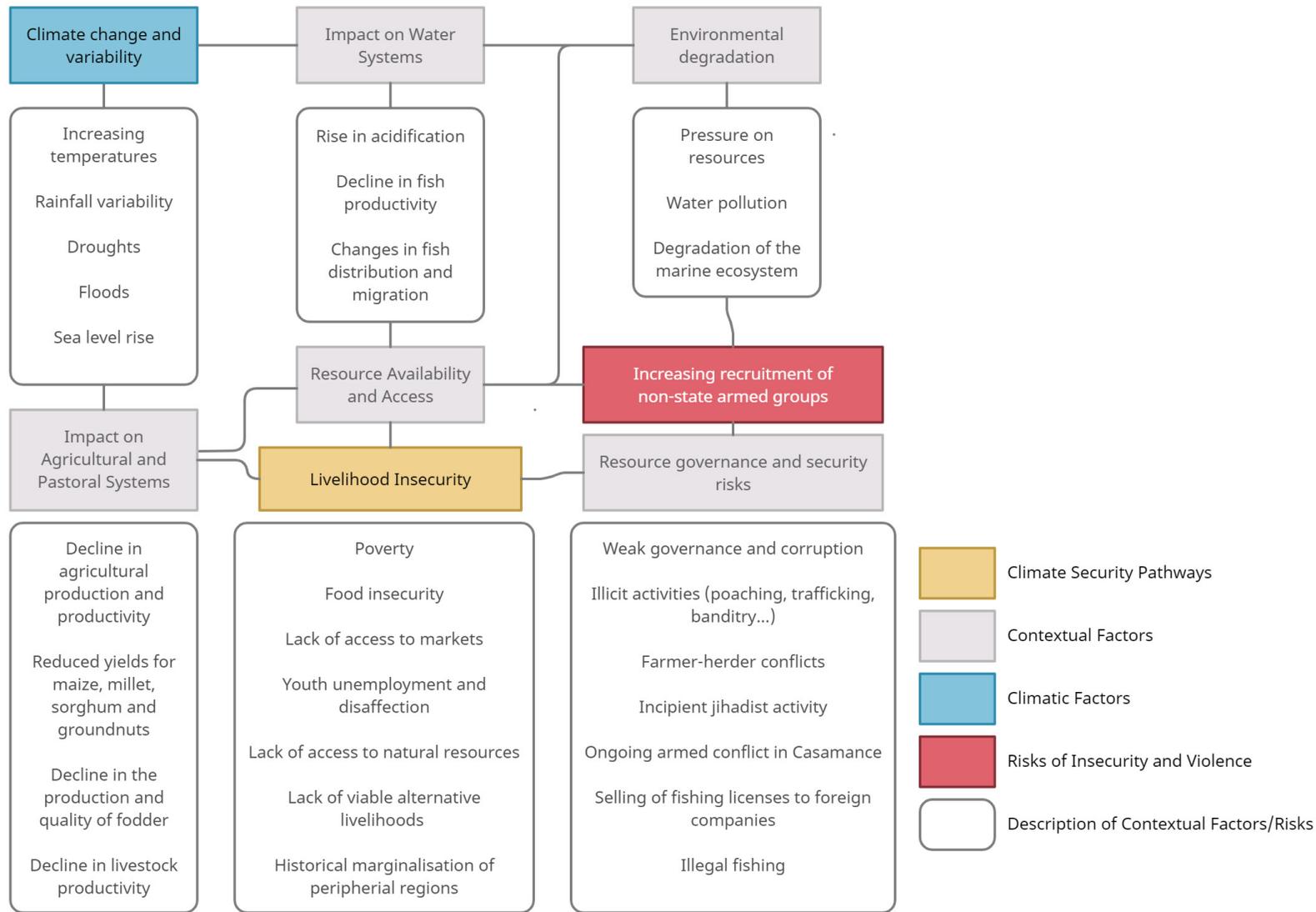


Figure 1: Climate Security Pathways for Senegal

still does not have a large influence in Senegal, there have been already some issues such as the imprisonment of 15 imams for preaching Islamist propaganda or the enrolment of many Senegalese in international terrorist groups (Volk 2017).

At the same time, Matam and Tambacounda are among the most vulnerable provinces of Senegal with most of its population relying on climate-sensitive livelihoods such as agriculture, livestock, fishing, and mining¹ which are already being affected by changes in climate. These regions are suffering from rainfall variability and dry spells, climate stressors that are projected to increase (USAID 2017a; National Agency for Civil Aviation and Meteorology of Senegal (ANACIM) et al. 2013; FAO 2016). The increase in temperatures is estimated to be faster in interior regions with some studies estimating an increase of 2°C in annual mean temperature in Matam and Tambacounda by 2050 which may result in more severe droughts (CIAT and BFS/USAID 2016; National Agency for Civil Aviation and Meteorology of Senegal (ANACIM) et al. 2013) Estimates predict a 9.2% and a 10% decrease in average precipitation in Tambacounda and Matam by 2050 (CIAT and BFS/USAID 2016).

The climate crisis will impact existing natural resources in Matam and Tambacounda which are already stressed by poor management practices, increasing competition over resources, and the politicization of land allocation. Altogether, these factors can undermine climate-sensitive livelihoods due to the reduced availability of resources which can compound pre-existing socio-economic and political inequalities, vulnerabilities, and risks such as food insecurity, poverty, unemployment, and the competition over the access and use of natural resources (USAID 2017b). The scarcity of natural resources and the livelihood insecurity may therefore contribute to insecurity, incrementing conflicts between farmer and pastoralist communities, and increase people's involvement in illicit activities such as poaching, trafficking, and banditry (USAID 2017b). Livelihood insecurity and more pronounced socio-economic and political vulnerabilities can increment the sense of abandonment by the central government, increasing radicalisation – especially among the youth – and paving the way for the recruitment of non-state armed groups which is mainly driven by unemployment and poverty (Sambe et al. 2016; Sambe et al. 2021; Sakor 2020; Nett and Rüttinger 2016; USAID 2017b; UNDP 2017).

PATHWAY #2: Fish scarcity, livelihood insecurity and recruitment by NSAGs

Fishery is one of the main industries in Senegal, employing around 17% of the workforce, accounting for 1.8% of the GDP and 32% of the exports and representing 62% of the protein intake of the population (Heck and Béné 2005; USAID 2017a). In the last decades, the fishing industry has suffered an acute crisis also witnessed in other parts of the world which have reduced the contribution of fishery to the GDP from an average of 2.2% in the 1990s to an average of 1.8% in the 2000s (Ministère de l'Environnement et du Développement Durable 2015b). The crisis has been linked to the reduction in fish stocks that are mainly linked to the problem of overfishing caused by extensive fishing of foreign vessels as well as illegal fishing and pollution which contribute to the degradation of maritime ecosystems (Faye 2011; Standing 2015; USAID 2009; 2017b; Blédé et al. 2015).

¹ Changes in climate may have both direct and indirect impacts on mining, including the modification of water resources due to droughts which are essential for mining operations (Rüttinger and Sharma 2016)

The climate crisis is also contributing to the reduction of fish stocks. Changes in climate have been observed in past decades, including a rise of 0.04 to 0.05°C in water temperatures between 1980 and 2009 as well as a progressive increase in water salinity in the coastal areas (Ministère de l'Environnement et du Développement Durable 2015a). Current estimates highlight that this trend is likely to continue in the future including also a rise in the acidification of the ocean (USAID 2017a; World Bank 2013). Altogether, these changes in climate are likely to critically alter the environment of marine fauna, reducing productivity and altering the distribution, reproduction, and migration of the species which would further reduce fish stocks (World Bank 2013; USAID 2017a; Ministère de l'Environnement et de la Protection de la Nature 2010). As a consequence, some estimations for West Africa project that 50% of the jobs related to the fishing industry will be lost by 2050 due to climate change, impacting livelihoods, purchasing power, and food security in the region (Belhabib et al. 2016).

The climate crisis will therefore contribute to the degradation of marine ecosystems and the overall decrease in fish availability, exacerbating existing socio-economic vulnerabilities such as food insecurity, poverty, and unemployment of the people whose livelihood is linked to the fishing industry. The restrictions and closing of borders due to the COVID-19 pandemic have additionally affected people working in fisheries (Lawal 2021). The lack of job opportunities in the coastal areas forces people to migrate to other countries in search of livelihood and work opportunities (Adepoju 2003; Jönsson and Kamali 2012; Cross 2009; Sall and Morand 2008).

Furthermore, the lack of economic opportunities, considered a driving factor in the recruitment of NSAGs (UNDP 2017; Nett and Rüttinger 2016), has been identified as a main driver in the recruitment of the young Senegalese coastal city of Dakar. A study from the Timbuktu Institute highlighted that lack of employment opportunities and poverty are considered the two main drivers of the enlistment of the Senegalese youth in jihadist groups (Sambe et al. 2016). Hence, the impact of climate change on fish stocks may exacerbate those socio-economic vulnerabilities and increase livelihood insecurity, incrementing prospects for the recruitment of NSAGs in coastal cities.

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CGIAR aims to address gaps in knowledge about climate change and food security for peace and security policies and operations through a unique multidisciplinary approach. Our main objective is to align evidence from the realms of climate, land, and food systems science with peacebuilding efforts already underway that address conflict through evidence-based environmental, political, and socio-economic solutions.