Climate Security Policy Coherence and Awareness Analysis Report: West Africa and Senegal

December 2, 2022

Frans Schapendonk[1], Carolina Sarzana[1], Cesare Scartozzi[1], Adam Savelli[1], Ignacio Madurga-Lopez[1], Grazia Pacillo[1], Peter Laderach[1]

[1]Alliance of Bioversity International and CIAT

Suggested Citation

Schapendonk, F., Sarzana, C., Scartozzi, C., Savelli, A., Mardurga-Lopez, I., Pacillo, G., and Laderach, P. (2022). Climate Security Policy Coherence and Awareness Analysis: West African and Senegal.

Acknowledgements

This work was carried out with support from the CGIAR Initiative on Climate Resilience, ClimBeR. We would like to thank all funders who supported this research through their contributions to the CGIAR Trust Fund.

Table of Contents

Executive Summary

This Policy Coherence and Awareness Analysis (PCAA) report assesses policy and strategy outputs from across a range of sectors in Senegal and West Africa in order to evaluate their coherence and climate security-sensitivity. The objectives of this analysis are to assess the connections between different policy fields and scales; analyse how well a policy or strategy output acknowledges the topic of climate security and the extent to which it displays awareness of climate-related security risks; and judge how concrete the policy or strategy is in terms of implementing processes, instruments, and specific programmatic activities to actively address climate-related security risks in a coherent manner.

The analysis conducted on policy and strategy outputs from Senegal and West African regional organisations revealed several key trends. Firstly, our analysis suggests that across all sectors and scales, awareness of the climate security nexus and the ways in which climate-conflict linkages may manifest is minimal. Whilst the individual components of the nexus (climate and environmental issues and peace and security issues) are present in around two thirds and just under half of all documents respectively, discussion of how climate and environment may intersect with drivers of conflict or peace virtually entirely absent. It therefore appears that climate-related security concerns – and the opportunities that climate action may present for peacebuilding and improved social cohesion – are yet to be mainstreamed across policymaking processes in the Senegalese and West African contexts.

Secondly, despite shortcomings at the aggregate level, disaggregating our results on the basis of sector revealed how some sectors did perform much better than others. Most notably, discussion of climate security was detected exclusively in policy and strategy documents relating to Disaster Risk Reduction (DRR). This may suggest that climate-conflict linkages – when they are conceptualised – are usually considered as a consequence of shocks and sudden-onset environmental events, such as droughts or flooding. Whilst incorporation of climate-related security concerns into such strategies is welcome, this narrow conceptualisation precludes consideration of how slower-onset climate impacts may contribute to human insecurity and therefore indirectly conflict and instability. It also perhaps implies a pre-occupation with preparing for and managing the short-term destabilising effects of climate change, rather than an exploration of how climate adaptation strategies and programming can produce notable co-benefits for sustaining peace and achieving security if enacted in a conflict-sensitive and pro-peace manner.

Thirdly, the widespread lack of evidence regarding specific programmatic activities and initiatives that address climate-related insecurities whilst explicitly taking into account potential climate-related security risks also suggests that designing such programming remains challenging. Whilst more specific research (such as Training Needs Assessments) will be required to determine specific areas where capacities are lacking, it appears that very few

programs and projects reflect on the need to be conflict sensitive or how their interventions may – if articulated as such and planned for – could contribute to social cohesion and peace.

Fourthly, we find limited evidence that policies and strategies include the appropriate infrastructure and procedures to ensure adaptivity. Whilst a majority of policies recognise the utility of remaining adaptive to complex dynamics and how the contexts in which they intervene may evolve, a minority of policies appeared to actually have put forward appropriate policy components to operationalise this. These include including certain signposts (key data types and values that should be continuously monitored to record the effects an intervention is having on its environment), triggers (key thresholds that when reached trigger adjustment), or contingency plans (alternative courses of action).

Finally, our results also suggest that regional governance bodies – in our case, the Permanent Interstate Committee for Drought Control in the Sahel (CILSS) and the Economic Community of West African States (ECOWAS) – achieved higher total coherence and awareness scores than Senegalese policy documents produced at the national level. Aside from policy and strategy documents produced by ECOWAS displaying a slightly higher tendency to engage with climate security-related topics, this score discrepancy can largely be explained by the fact that regional level documents were more likely to make provisions for implementation of objectives, albeit related almost exclusively to climate-related insecurities rather than for the purposes of integrated climate security-sensitive programming. This, however, might suggest that regional level programmatic initiatives that are perhaps connected to national or sub-national level processes do offer potential entry points for the incorporation of climate security considerations.

On the basis of these findings, the following recommendations are made to address the identified gaps and shortcomings:

1) **Take steps to familiarise the topic of climate security amongst policy- and decisionmakers in order to mainstream climate security considerations throughout policy formation processes**

2) **Actively make climate part of the solution by taking steps to enlarge current understandings of how and where climate-related security risks can be mitigated beyond DRR approaches and strategies, particularly for adaptation programming designed to address longer-term climatic shifts**

3) **Mainstream adaptivity principles amongst policymakers and build the adaptive capacity of the systems of governance they are a part of to remain responsive to emergent climate-related security risks**

4) **Find entry points within the UNFCCC (United Nations Framework Convention on Climate Change) reporting mechanisms to anchor climate security-sensitive responses and mainstream climate-conflict/climate-peace considerations**

Introduction

Climate change-related impacts – ranging from sudden shocks and more frequent extreme weather events in the short-term to more gradual changes in temperature and precipitation rates in the long-term – are unlikely to be experienced uniformly. Different degrees of vulnerability among and within countries are driven by patterns of intersecting socio-economic development, unsustainable ocean and land use, marginalisation, historical and ongoing patterns of inequity such as colonialism, and governance (Langsdorf et al., 2022). At the national and regional scales, for instance, certain countries (such as those located near the equator or poles) exhibit greater degrees of exposure to climatic shifts, whilst countries whose economies are highly dependent on climate-sensitive and/or face challenges in diversifying their economic base are inherently more vulnerable to climate-induced perturbations (Feitelson & Tubi, 2017).

Even within countries, large scale climate change-related shifts will have highly distinctive local manifestations. Adopting a landscape lens, for instance, invites us to recognise the multi-level and multi-sectoral character of most policymaking contexts, with the extent, direction, and rate of change differing across and within landscapes (Shuttleworth, 2017). Take, for instance, a coastal setting at risk of sea level rise. Governing authorities may need to simultaneously physically protect the communities who live there, ensure the continuation of economic activity and livelihoods, maintain tourism, and conserve the local natural habitat. The policy actions that need to be undertaken to achieve each of these things are likely very different from each other, yet policy options must be chosen that do not necessarily close the door on others and, where possible, act in a synergistic manner to strengthen a set of collective goals and desired outcomes.

As a consequence of the complex interactions between the biophysical and social worlds – occurring across multiple temporal and spatial scales and often characterised by complex feedback relationships – governance must sensitively account for both 'vertical' and 'horizontal' policy interlinkages and interactions, avoid one-size-fits-all approaches, and ensure effective stakeholder participation and collaboration across multiple scales to detect feedback (Shuttleworth, 2017). This is critical for detecting the unintended consequences a policy intervention in such a complex landscape will likely have and to adjust an intervention where required. Conventional contemporary methods of policy assessment are, however, constrained as they do not tend to focus on these complex interactions and often make use of key indicators that can miss outcomes displaced in time and space (Spicer et al., 2020).

Failure to ensure coherence and develop adequately responsive governance not only represents a missed opportunity to address interconnected issues in a coordinated manner, however. The unintended consequences and local side-effects of adaptation- and mitigation-related policy interventions may indirectly serve to undermine the human security of often

already vulnerable communities, thereby also potentially heightening the risk of conflict (Church & Crawford, 2018; Tänzler & Scherer, 2018). Marginalization linked to gender, ethnicity, low income, and combinations thereof – often manifesting in indigenous communities, local communities, and minority groups – often serves to render already excluded communities and individuals more exposed and vulnerable to climate change-related impacts whilst also causing them to possess a much-reduced capacity for coping with and adapting to climate impacts (Islam & Winkel, 2017). Such communities may be highly dependent on climate-vulnerable livelihoods whilst simultaneously lacking the financial, socio-political, and human capital to successfully reduce their exposure and vulnerability to such risks. If the needs and rights of such communities are not adequately accounted for in policy design and implementation, both adaptation measures as well as transitions to greener economies can create additional pressure on natural resources such as land or water, exacerbate existing inequalities in resource and service access, negatively affect livelihoods, and deepen social cleavages (Detges et al., 2020).

Examples of how conflict-insensitive adaptation and mitigation initiatives may threaten the human security of vulnerable communities are abundant within the literature. Effective and equitable implementation of the UNFCCC's Reducing Emissions from Deforestation and Forest Degradation (REDD) programme, for instance, is heavily dependent on addressing improved forest governance and controlling forest-linked corruption. Pre-existing corruption in contexts where REDD is implemented could work against the conservationist and developmental motivations behind the scheme by skewing the establishment of baseline carbon data or the monitoring of avoided emissions or benefits to local communities, and may also create additional incentives and opportunities for corrupt activities. Public officials might, for example, engage in corruption to extract rents from REDD resource, bringing with it the 'resource curse' (Bofin et al., 2011). Implementation efforts of REDD programmes that remain insensitive to such risks may inadvertently contribute to undermining legitimacy and trust in government. Additionally, programme design that is inadequately responsive to local socio-political dynamics can also entrench pre-existing inequalities, demonstrated by an REDD programme in Nepal which actually worsened livelihood insecurity and the potential for land conflict, as the alternative livelihood strategies provided to the Chepang ethnic community were not suitable for all groups (Patel et al., 2013).

Other mitigation efforts such as afforestation or the production of biofuels, both considered cost-effective and readily available climate change mitigation options, also carry with them implementation risks, particularly as such efforts are increasingly located in regions with high investment risks and weak governance. There are, therefore, major trade-offs and potential negative externalities for already vulnerable communities, with both afforestation and biofuel production often requiring the large-scale acquisition of land to be effective. This

often simultaneously reduces the availability of agricultural land, potential resulting in increased competition for land in contexts characterised by scarcity and poorly recorded land tenure rights. This could in turn lead to higher food prices, an increasingly food insecure population, and a greater risk of conflict (Borras et al., 2011; Doelman et al., 2020).

While climate policies can therefore unintentionally trigger or fuel conflict, interventions related to peace and security may also exacerbate climate-related security risks. Military interventions often have negative impacts on the livelihoods and resilience of local populations, for instance by contributing to displacement or restricting legal livelihoods (Detges et al., 2020). In the Lake Chad Basin, for example, both ongoing attacks and security measures undertaken in response to the presence of non-state armed groups (NSAGs) have limited the mobility of vulnerable communities who rely on migration to remain responsive to a changing climate (*Lake Chad Basin Crisis*, 2021). Restrictions on movement have also severed agricultural value chains and limited the provision of basic services, thereby reducing incomes and support mechanisms for poor households and lowering the opportunity cost for individuals to engage in violence. Traditional approaches to peacebuilding also tend to struggle to account for the complex and ever-evolving connections between climate change and conflict, hampered for example by the fact that context-specific and timely assessments of evolving climate security risks are difficult to obtain, thereby inhibiting the ability of peacebuilders to plan and adapt to changing conditions (Matthew & Hammill, 2013). Furthermore, as climate-related security risks tend to emerge as a consequence of a complex set of processes and conditions operating across multiple dimensions and timescales, responses must address both short-term needs and demands whilst also feeding into longer-term, adaptive, and climate-sensitive development trajectories. It remains challenging to effectively coordinate the wide cross-section of local actors from across the humanitarian-development-peace continuum, meaning that in most cases, responses to climate-related insecurity are reactive as opposed to preparatory or adaptive (Krampe, 2019).

Given the human security and potential conflict risks attached to ineffective and incoherent governance in the context of the climate crisis, it is critical that policy- and decision-makers are provided with effective policy design and evaluation tools that help generate evidence and identify shortcomings with regards to existing policy outputs. This report aims to contribute to this need by conducting a climate security policy coherence and awareness assessment of policy and strategy outputs extracted from climate- and peace and security-related sectors produced at the national level in Senegal. It will do so by making use of a policy assessment framework developed specifically for the purpose of assessing coherence and climate security-sensitivity. In conducting our analysis of selected policy and strategy documents, we are seeking to answer the following key research questions:

- To what extent do the selected documents engage with the topic of climate security and display an awareness of climate-related security risks?
- To what extent can coherence be detected between climate- and peace and security-related policy domains?
- How deep is the level of engagement with the topic of climate security evidenced by the documents? Does the mitigation of climate-related security risks feature in implementation-related policy components?
- To what extent to the documents display in-text evidence of deploying multi-level and adaptive governance mechanisms?

Country Context: Policy Processes and Institutional Characteristics

This section seeks to provide a brief introduction to the contemporary institutional structure of the Senegalese state and government, outline any major processes of governance or reform that are either currently underway or that have been recently completed, and identify the Senegalese government's membership and role in relevant regional and continental multilateral organisations. Sketching out the institutional context within which the policy and strategy outputs examined as part of this study were produced is critical in appropriately contextualising and localising our interpretation of any trends and patterns we are able to detect, as well as ground any recommendations produced on the basis of said analysis and interpretation in local institutional realities and logics.

Senegal is a presidential democratic republic that - since its independence - has largely avoided severe brushes with the authoritarianism and economic corruption that emerged in some other parts of the African continent. As part of its latest iteration of the Democracy Index, the EIU ranked Senegal as the 11th most democratic out of 44 countries in Africa, labelling it a 'hybrid democracy' (Economist Intelligence Unit, 2022). Below the Office of the President and the Cabinet, 32 line ministries serve to implement government policy in coordination with 45 provincial departments spread across 14 administrative regions. Senegal has a deconcentrated and decentralised framework of governance, constituted by the 1996 Local Governments Code – which mandated the transfer of power to sub-national level governments – as well as the 2001 constitution. A third act of decentralisation was signed into law in 2014, reinforcing the status of municipality governments and extending this status to all local towns, as well as granting departments the official status of decentralised entity. The second part of this act has been designed to empower departments by allowing them to raise taxes at the sub-national level, reforming the grant and subsidies system, and create synergies between the three tiers of government (national, departmental, and municipal) (UCLG and OECD, 2016). As a consequence of this framework, local governments have been devolved 9

areas of competences, namely, land registry; natural resources management and environment; health and social care; education; culture, sport, and recreation; planning and territorial development; and urban planning and housing (UCLG and OECD, 2016).

Arguably the most important concurrent development initiative underway in Senegal is the Plan for Emerging Senegal (PES), first introduced in 2014. This multi-pillar development model – in place until 2035 - has been adopted in order to counter stagnant GDP growth and human development, driven by the exhaustion of traditional engines of growth in Senegal (construction, telecommunications, and financial services), the lack of dynamism in the private sector, the rapid rise of public expenditures, and the persistence of a current account deficit in the balance of payments (allAfrica, 2022). To do so, the program aims to transform the structure of the economy by improving the productivity of current growth drivers, human capital, and local governance through the creation of infrastructures that encourage investment in key productive sectors, services, and improvement of the business environment, thereby also ultimately achieving social justice (Maisonnave & Maboundou, 2020). The strategy itself is operationalised and achieved through a set of five-year Priority Action Plans (PAP), which are in turn elaborated through development projects and programs incorporated in the budget frameworks. Within this context, a National Sustainable Development Strategy (2015) was developed, constituting a reference framework for government action and a unifying document that reflects Senegal's commitment to the principles of sustainable development. At the sectoral level, sector development policy letters – which determine the development priorities of each sector – have also been developed (Partnership on Transparency in the Paris Agreement, 2019).

Senegal's decentralised governance architecture sets the tone for the manner in which the country approaches climate governance. Climate change policy and legislation feature in a complex framework of cooperation between various decentralised entities, with local and regional authorities sharing competencies with the national government. Climate change is commonly linked to the promotion of sustainable development – defined in both social and economic terms – and features in a large range of policy areas (Nachmany et al., 2015). At the national level, the Climate Change Division – located within the Department of Environment and Classified Establishments (DEEC) in the Ministry of Environment and Sustainable Development – is the primary technical unit responsible for the implementation of climate change-related goals and objectives. This mandate is enacted by working in close cooperation with the National Committee on Climate Change (COMNACC), a multi-stakeholder platform created in 2011 to coordinate cross-ministerial action on climate change adaptation and mitigation and to facilitate the integration of climate information into decision-making processes and national strategies (Partnership on Transparency in the Paris Agreement, 2018). These bodies are together responsible for sensitization, information sharing, and

training on climate change; the validation of climate change-related studies; the consideration of climate change in policies, plans, and programmes; development and implementation of national adaptation and mitigation measures; and the elaboration and submission of Senegal's national position for international negotiations and meetings on climate change-related topics.

The national-level COMNACC is connected to sub-national level governance through the Regional Committees on Climate Change (COMRECC) (COMRECC, 2019). These bodies are composed of decentralised authorities, local communities, decentralised state services, the private sector, non-governmental organisations (NGOs), and community-level organisations, and fulfil the same mandate as their national level equivalent (information, awareness, training, facilitation in design, financing, implementation, validation, and monitoring) (COMNACC, 2019).

Aside from adaptation and mitigation, Senegal has in recent years undertaken a broad array of measures towards increasing governance capacity for disaster risk reduction (DRR). Located within the Ministry of the Interior, the Directorate of Civil Protection (DCP) is primarily responsible for DRR as well as acting as the Secretariat for the High Commission for Civil Protection, which advises the Ministry of the Interior on related issues. Activities conducted by the DCP occur under the auspices of the National Relief Coordination Plan (ORSEC), the formal national risk prevention and disaster management mechanism under the Ministry of Interior. This plan has been initiated as a contingency plan aimed at minimizing disaster risks, as well as organising and coordinating the national disaster response. In practice, however, initiatives implemented under the plan are to this day still primarily reactive and limited to acute relief, such as water-pumping, channel digging, and evacuation where needed (Schaer et al., 2018). DRR efforts are supported by climate information services provided by the National Agency of Civil Aviation and Meteorology (ANACIM), which provides a variety of climatological data in the form of monthly and seasonal bulletins, as well as sector-specific projections.

A number of entities with risk-specific mandates also feature within Senegal's DRR governance architecture, particularly around water and flood management, some of which have not as of yet been fully operationalised. One example of such a body is the Directorate of Prevention and Flood Management within the Ministry of Water and Sanitation, convened in order to bring together all actors involved in the prevention and management of floods (Ministry of Water and Sanitation, 2022).

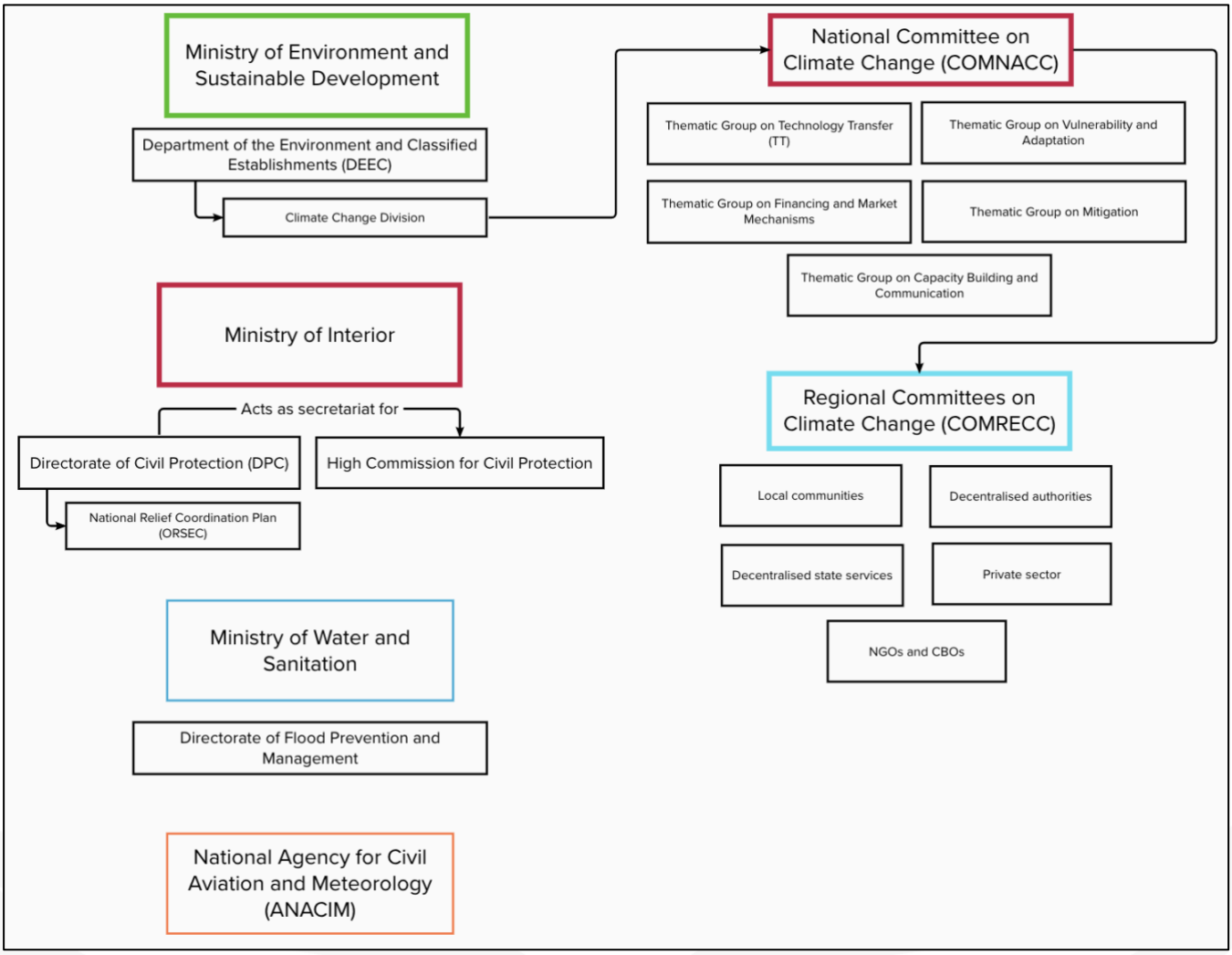


Figure 1. Climate and disaster risk reduction governance in Senegal.

Partially as a consequence of its geographical location in the Sahelo-Saharan region, Senegal faces a number of both internal and external threats to peace and security. Porous borders mean that instability occurring within the territory of its Eastern neighbour Mali – as well as the increasingly apparent rise of Salafism within Mauritania to its North – could easily spill over into Senegalese territory.[1] Furthermore, to the South, Senegal has since 1982 suffered the presence of a low-level internal conflict between the central state and government security forces on the one hand, and a Casamance region separatist movement on the other. The conflict reached its zenith throughout the 1990s and early 2000s, after which a first peace agreement was signed between the Senegalese government and the faction of the Movement of Democratic Forces of Casamance (MDFC) led by Augustin Diamacoune Senghor. The conflict then morphed into a low intensity war in which certain MFDC factions that did not accept the peace agreement also fought among each other, while increasingly engaging in the illicit economy of illegal logging and drug trafficking. Since President Macky Sall came into power in 2012, two simultaneous peace process (one led by the Centre for Humanitarian Dialogue and another one led by the Sant'Egidio community) have been ongoing. Neither of these two peace processes have fully materialised, and the government deployed a military operation in 2021 with the objective of defeating a hard-line faction of the MDFC that remain active near the border with Guinea-Bissau (Eljarh, 2016; Madurga-Lopez, 2021; Ouédraogo, 2021).

Aside from this pre-existing system of conflict and its legacy within Senegal, climate change-related impacts are also increasingly contributing to threats to human security. Rising temperatures, increasing rainfall variability and ocean acidification are reducing crop yields, livestock productivity and fish stocks with detrimental effects over livelihoods and food security within Senegal (CIAT & BFS/USAID, 2016; Ministère de l'Environnement et du Développement Durable, 2015; National Agency for Civil Aviation and Meteorology of Senegal (ANACIM) et al., 2013). The Sahelian drought of the 1970s and 1980s proved to have a devastating impact, particularly for rural communities who witnessed the loss of land, the reduced availability of water resources, crop losses, livestock death and an overall intensification of food insecurity. Many of these rural households were forced to migrate to the main urban centres (Gueye & Deshingkar, 2020). At present, worsening climate conditions and the increasing number of extreme weather events may, once again, have a strong detrimental impact on natural resources availability as well as on livelihoods by exacerbating existing risks and vulnerabilities.

Climate-induced livelihood and food insecurity increase the likelihood of radicalisation and the prospects for recruitment into armed groups. Simultaneously, worsening socio-economic

[1] In fact, in the last few years different terrorist groups have tried to expand their influence and attempted to establish terrorist cells in the province of Tambacounda (Pujol-Mazzini, 2018).

conditions contribute to rural-urban migration both inside and outside of the country. The impact of climate change on land, water and food systems also curtails the availability of certain key resources which, apart from increasing livelihood and food insecurity, also impact the availability of natural resources and increase competition over their access and use.

Senegalese security governance architecture appears to consist of a predominantly top-down structure, with the key institutions helping to define and implement national security policy being the Supreme National Defence and National Security Councils. The former examines questions pertaining to national defence, and issues recommendations with regards to general and military management of national defence. The make-up of the council is predominantly limited to those ministries either directly or indirectly related to what can be deemed as conventional security threats, including for instance the Ministries of Armed Forces; Foreign Affairs; Interior; Mines, Energy, and Water Resources; and Equipment and Transportation (Ouédraogo, 2021). Sitting underneath the Supreme National Defence Council, the National Security Council has more members than those previously listed, representing all agencies involved in the military, economic, and civilian aspects of defence. Finally, the Strategic Guidance Centre is a body placed under the direct authority of the President, with the mission of centralising all information from different government agencies and coordinating various intelligence services (Ouédrago, 2021).

Efforts to foster peace within Senegal have focused predominantly on the south of the country, particularly within the aforementioned Casamance region. The 2004 Ziguinchor Peace Agreement Between Government of Senegal and MFDC established the creation of a Council of Surveillance of the Peace Agreement (CSAP) to supervise the peace process and to peacefully settle disputes. Its mandate focused on the interpretation of the measures of the Peace Agreement (*General Peace Agreement Between the Government of the Republic of Senegal and Le Mouvement Des Forces Démocratiques de La Casamance (MFDC)*, 2004). Following the peace agreement, the government established the *Programme de Relance des Activith Economiques et Sociales en Casamance (PRAESC)* with the objective to assist the restoration of a favourable economic and social environment in Casamance as well as to facilitate sustainable long-term development while fully respecting its specificities (World Bank, 2004). Some of PRAESC's specific short-term objectives included mine clearance, demobilisation, reinsertion and reintegration (DRR) program and a local development program, among others. The peace agreement created the National Agency for the Recovery of Social and Economic Activities in Casamance (ANRAC) to supervise and implement the PRAESC.

Aside from peace dialogues conducted between the central government and representatives from the MDFC, addressing some of the fundamental drivers of the conflict here has been primarily envisaged as occurring within the broad framework of decentralisation and

devolution ongoing since the late 1990s. Bottom-up peace initiatives that seek to prevent the escalation of conflict at the local level (such as peace committees) have also been widely deployed – particularly by the international community – although the efficacy of these in addressing the root causes of conflict has been called into question (Sanchez, 2018). Grassroots women's' organisations, 210 of which are under the umbrella of the *Plateforme des Femmes pour la Paix en Casamance* (PFPC), have also played a role in the peace process by fostering women's voice in the peacebuilding process (PartnersGlobal, 2019).

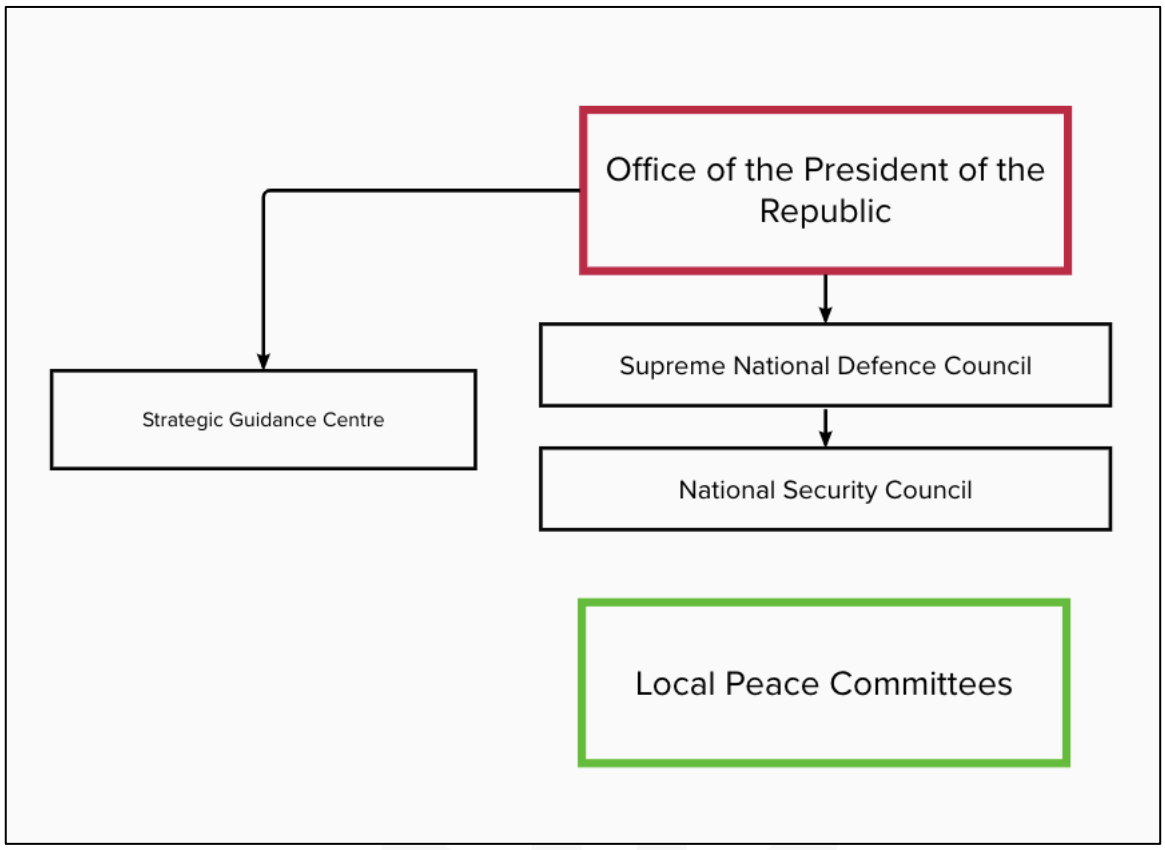


Figure 2. Peace and Security Governance in Senegal.

Finally, Senegal is also an active member of several regional bodies and entities. This includes, firstly, the Economic Community of West African States (ECOWAS), a regional political and economic union of fifteen states in West Africa. ECOWAS has a multi-sectoral mandate, including those sectors most relevant to climate security (Agriculture and Environment and Political Affairs, respectively). Implementation of activities in the agricultural sub-sector revolve around four components of the Regional Agricultural Investment Programme (RAIP), which include the promotion of strategic projects for food security and sovereignty; the promotion of a global environment conducive to regional agricultural development; the reduction of food vulnerability and the promotion of sustainable access to food; and

governance, coordination, and monitoring-evaluation of implementation. Senegal has as part of its formulation of the NAIP dedicated 10% of its national budget to investments in agriculture, particularly through the provision of critical agricultural inputs (ECOWAS, 2022a). Furthermore, Senegal is also a part of the implementation phase of the ECOWAS Regional Agricultural Information System (ECOAGRIS), which enables regional interconnection between national agricultural information systems.

Through its Directorate of Political Affairs, Peace and Security (PAPS), ECOWAS also has a peace and conflict prevention/management-related mandate. The Directorate facilitates the implementation of the protocol relating to the Mechanism for Conflict Prevention, Management Resolution, Peacekeeping and Security (created in 1999). Furthermore, it is also actively involved in supporting ECOWAS mediation efforts and Organs whilst facilitating and servicing the Mediation and Security Council at the ambassadorial, ministerial, and Head of State levels (ECOWAS, 2022b).

Senegal is also party to - and beneficiary of - activities and research conducted by the Permanent Interstate Committee for Drought Control in the Sahel (CILSS), the general objective of which is to invest in food security and mitigate the effects of drought and desertification. More specifically, CILSS engages national level partners in the formulation, analysis, coordination, and harmonisation of strategies and policies; the strengthening of scientific and technical cooperation; the collection, processing, and dissemination of informational; capacity building; the capitalisation and dissemination of experiences and achievements; and support the implementation of strategies, policies, and programmes (CILSS, 2021). The committee's interventions are therefore divided into several thematic areas, many of which are in some way a component of the climate security nexus. These include food and nutritional security; national resource management and climate change; population, gender, and displacement; access to markets for agriculture and agri-food products; and mastery of water. CILSS's strategic objectives in these thematic areas are operationalised through specific multi-actor projects, as well as through Regional Support Programmes.

Methodology

We deploy a policy analysis framework created specifically for assessing the degree to which coherence exists between policy domains deemed relevant for the mitigation of compounding climate-related security risks, the extent to which selected documents display awareness of and engagement with the topic of climate security, and the level to which policy and strategy outputs can be said to be proposing tangible policy and programmatic measures for the mitigation of climate-related security risks.

The framework was designed to be responsive to the needs and requirements associated with the previously outlined research questions. Firstly, the results produced by the framework had to be to a certain degree quantifiable in order to produce an empirical framework within which comparisons, patterns, and trends across sectors and document types can be identified, observed, and analysed whilst also remaining cognizant of the subjective nature of analysing large quantities of text in search of particular meanings and insights. Secondly, in order for the analysis to identify specific success factors, bottlenecks, and shortcomings in the climate security-sensitivity of selected policy outputs – as well as possess sufficient specificity to be able to make practical recommendations for improvement in this regard - results must point towards specific thematic and technical areas within policy outputs where shortcomings can be detected. As such, the method proposed here forms a hybrid policy analysis tool that incorporates an automated content analysis (ACA) with a directed computer-aided textual analysis (CATA). Stemler (2000, p.1) defines content analysis as a "systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding", thereby encompassing all the techniques aimed at making inferences to identify specific features of messages (Holsti, 1969). This process can be divided into three main phases, namely, preparation, organisation, and the reporting of results (Elo et al., 2014). The preparation phase consists of collecting data appropriate for conducting content analysis, making sense of said data, and selecting the unit of analysis. In order to identify and extract relevant policy and strategy documents for this study, a keyword search strategy was developed based on the key concepts identified by the research questions. Boolean Operators were used to help enhance and narrow down the keyword search by establishing relationships between the different terms using the connector "AND", used to only retrieve the documents that mention all of the terms included in the search (for instance, searching for "climate" AND "policy" AND "[country]"). This search strategy was enacted in a variety of online repositories – including the Climate Policy Database and the International Energy Agency's (IEA) policies database – as well as within Kenyan government and ministerial websites.

A set of inclusion and exclusion criteria for extracted policy and strategy documents was subsequently developed based on the thematic priorities identified by the research questions, and helped establish the sectoral, temporal, and geographical scope of the analysis. Our sectoral scope encompassed policy and strategy outputs from climate and environment-related sectors, peace and security-related sectors, and cross-sectoral plans and strategies (where cross-cutting and compounding issues are most likely to be addressed). Secondly, our temporal scope limited analysis to documents produced in 2010 or later, ensuring that selected documents are more likely to be reflective of current national priorities and contexts, thereby improving the relevancy and utility of our document analysis. Finally, inclusion was also based on the different scales at which analysis will be undertaken. For this

study, analysis will focus on policy and strategy outputs produced at the national and regional levels. As such, the analysis aims to make an assessment regarding both horizontal coherence at the national-level and vertical coherence between national and regional levels.

The organisation phase involves the development of a categorisation matrix based on pre-existing knowledge or theory whereby all the data are reviewed for content and coded for correspondence to or the exemplification of the identified categories (Polit & Beck, 2012). These categories can be established inductively - in an emergent manner throughout the entire process of coding and analysis - or deductively, based on of a pre-existing set of research priorities or expected patterns and outcomes. This research deployed a deductive approach, with the specific categories and benchmarks being developed on the basis of the state of the art of climate security research. Our content analysis is therefore largely directed, defined by Hsieh & Shannon (2005) as an approach useful for the validation or conceptual extension of a pre-existing theoretical framework or theory that can be used for the ex-ante creation of analytical categories for the assessment of bodies of text.

The framework (see Annex 1) therefore takes the form of an analytical checklist against which the selected policy and strategic outputs are assessed. The categories that make up the framework reflect the key thematic and technical features we would expect to find within a document that can be said to be aware of and sensitive to the nature and presence of climate-related security risks. Each category consists of at least one benchmark that a policy is required to meet to successfully fulfil a given analytical category. These are organised to focus on two broad areas:

1. How well does a policy or strategy output acknowledge the topic of climate security and display awareness of climate-related security risks? (Acknowledgement)
2. How concrete is the policy or strategy in terms of implementing processes, instruments, and specific measures to actively address climate-related security risks in a coherent and cross-sectoral manner? (Implementation)

Within the majority of evaluation categories, a distinction is also made between implicit and explicit recognition and mitigation of climate-related security risks. This is done because policies and programmes that explicitly mention and seek to mitigate climate-related security risks are the exception rather than the rule. The majority of policy outputs produced in relevant policy are therefore likely to outline activities that are pertinent for the mitigation of climate-related security risks, but are unlikely to explicitly label these as such. Furthermore, identifying examples where for instance the programmatic infrastructure or policy platform may already be in place for the mitigation of climate-related security risks (although not articulated as such) is an essential step for producing relevant and actionable

recommendations. The framework has thus been designed to identify both gaps as well as potential entry points.

We operationalise this distinction on the basis of our definition of climate as a risk or threat multiplier, with climate change-related impacts only tending to indirectly affect the risk of conflict by operating through critical intermediary variables (conceived of as human security risks). An implicit link between climate change-related impacts on the one hand and conflict-related outcomes on the other is conceptualised as being focused on the first two of the three components of this (non-linear) causal sequence (see figure 1). Implicit linkages or implicit implementation-related policy content are therefore defined as focusing on understanding or mitigating the relationship between climate change-related impacts and human (in)security, without necessarily identifying either a further potential link to conflict or – in the case of objectives, instruments, and action plans - without articulating any potential peace and security co-benefits of an intervention. An explicit linkage or implementation-related policy content is defined as an intervention that conversely detects or acts to mitigate the sequence leading from climate change-related impacts to conflict in its entirety, drawing a common thread through from climate to human (in)security and finally conflict-related outcomes.

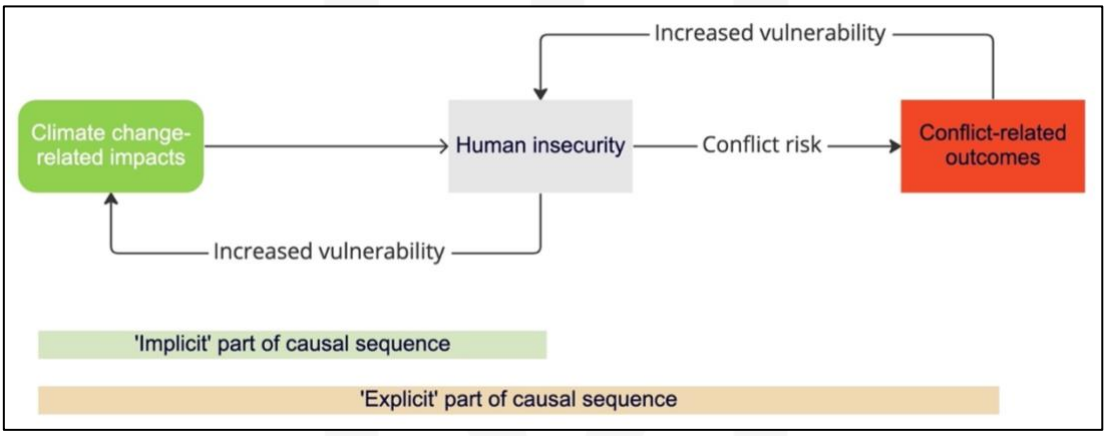


Figure 3. The three components of the (intra-state) climate-conflict sequence.

Finally, in order to report the results generated as a consequence of the analysis, coded results were subjected to empirical analysis so that key trends and patterns could emerge from the final dataset. Results were disaggregated across scale of governance, sector, and at the level of both overarching evaluation category and at the level of individual benchmarks.

In order to operationalise the framework outlined in table 1 and help facilitate the analysis, our method uses a hybrid automated content analysis (ACA) which combines the strengths of quantitative and qualitative approaches while mitigating their respective drawbacks. As noted by Baden et al, computational tools are limited in their ability to comprehend theoretical constructs but can "classify textual contents in a perfectly consistent, scalable

fashion" (Baden et al., 2020). Conversely, human coders exceed algorithms in their capacity to infer meaning, but their work is affected by biases and human errors. Therefore, by combining the two approaches, we aim to be able to analyse a large-n dataset while still providing in-depth readings of selected documents. In the field of climate security, this methodology has already been proven as a successful tool of inquiry in multiple studies (Scartozzi, 2021, 2022b, 2022a).

The ACA proposed in this study is composed of four consecutive steps. The first step of the analysis involves the breakdown of broad and open-ended research questions into smaller proxy benchmarks that can be answered via an automatic or hybrid content analysis. To this end, the benchmarks are designed to be affirmative statement that can be answered with a true (1) or false (0) statement. This process of deconstruction is necessary as rule-based algorithms work best to answer well-defined and bounded questions.

The second step of the content analysis sees the use of computational algorithms to pre-process the text contained in the policy documents. First, the text is extracted in bulk from the original documents and converted into a homogenous digital format. Then, the text is labelled, using documents' metadata, and parsed into a unified dataset or corpus. Finally, to allow for statistical analysis, the text is removed of irrelevant content (e.g., stop words), stemmed, lowercased, and lemmatized. Words are also weighted by term frequency while n-grams by strength of co-occurrence. Altogether, this process cleans and homogenizes the text contained across documents and creates a corpus that is searchable by rule-based algorithms and human coders.

The third step of the ACA sees the deployment of algorithms to categorize the text and identify relevant content that can be used to assess the benchmarks. During this step, rule-based algorithms search the corpus using a series of search strings, or queries, that consist of bags of words connected by rules. For instance, if we want to test whether a document acknowledges a link between climate and conflict, we can use a search string that looks for a bag of stemmed words related to environmental variables (e.g., climat, water, environmen, etc.) near a bag of words related to conflict (e.g., conflic, violen, war, etc.). If we then wish to know whether a document refers to the link between climate and conflict as a key challenge, we add to the search string a bag of words related to "challenge" (e.g., significan, key, challenge, etc.).

The fourth step involves the coding of documents. The ACA automatically searches for co-occurring words within documents and produces a codebook with the resulting scores. The scores are then assigned a level of uncertainty, which can be either low, medium or high. The

uncertainty level is a measure of the validity of the findings and the noise that has been generated by the algorithms in analysing text. Usually, uncertainty is low when algorithms assess the occurrence of well define lexical constructs and is high when they assess loose relationship between words or open-ended lexical constructs. Scores with low uncertainty are automatically assigned by the ACA. Conversely, when policy documents have a low score and high uncertainty level, the results of the ACA are validated by human coders.

No.	Category Type	Analytical Category		Benchmarks
1.	Acknowledgement	Horizontal acknowledgement	1A	Policy makes reference to at least one other policy or strategy document from a sector relevant to climate-related security risks (determined by the sectors outlined in inclusion criteria) at the same level of governance
2.	Acknowledgement	Vertical acknowledgement	2A	Policy makes reference to at least one other policy or strategy document from a sector relevant to climate-related security risks at another policymaking level (regional if policy is national, national if policy is regional)
3.	Acknowledgement	Thematic engagement (climate)	3A	Document references climate change as a challenge, either for all sectors or for a specific sector
			3B	Document refers to specific climate change-related impacts (physical – such as natural disasters - or intangible, such as temperature increases)
4.	Acknowledgement	Thematic engagement (peace, security, and conflict)	4A	Document references insecurity, conflict, or fragility as a challenge, either for all sectors or for a specific sector
			4B	Document refers to specific drivers of conflict, fragility, or insecurity (note: not climate)
5.	Acknowledgement	Thematic engagement (climate security)	5A	Document references/states that there are links between climate change and conflict (*implicitly* or *explicitly*)
			5B	Policy mentions or spells out at least one specific climate-related security pathway that defines and explains the links between climate change and insecurity/conflict
6.	Acknowledgement	Definitional Coherence	6A	Policy clearly articulates and outlines an overarching definition of climate security
			6B	Policy articulates and operates on the basis of a human security-based understanding of climate-related security risks
			6C	Policy clearly articulates and operates on the basis of a threat/risk multiplier conceptualisation of climate-related security risks
			6D	Policy operates on the basis of a systems-based understanding of climate-related security risks

7.	Acknowledgement	Policy adaptivity	7A	Policy displays evidence of deployment of adaptive theory, including the need to learn to live with uncertainty and change (institutional learning), combine different types of knowledge for learning (knowledge pluralism), create opportunities for self-organisation, and the deployment of polycentric governance (networked governance)
8.	Implementation	Cross-sectoral and cross-scalar processes and awareness	8A	Policy mentions the need for coherence/integration between different policy sectors and fields
			8B	Policy mentions or proposes specific instruments, structures, or work processes that relate to improving coherence between ministries or other implementing partners to address climate-related security risks specifically at the same level of governance (such as, for instance, specific cross-ministerial working groups)
			8C	Policy mentions or proposes specific instruments, structures, or work processes that relate to improving coherence between ministries or other implementing partners to address climate-related security risks specifically between multiple levels of governance (such as, for instance, participatory policy design processes or the inclusion of multiple systems of knowledge production, including traditional governance mechanisms)
			8D	Policy explicitly reflects on potential vulnerabilities (potential negative externalities) and strengths (potential positive externalities)
9.	Implementation	Objectives	9A	Policy sets out specific objectives *implicitly* related to the mitigation of climate-related security risks
			9B	Policy sets out specific objectives *explicitly* related to the mitigation of climate-related security risks
10.	Implementation	Instruments	10A	Policy identifies and spells out specific policy instruments or implementation measures that *implicitly* address climate-related security risks (examples include specific programs and projects, capacity building, regulations, etc.)
			10B	Policy identifies and spells out specific policy instruments or implementation measures that *explicitly* address climate-related security risks (examples include specific programs and projects, capacity building, regulations, etc.)
			10C	Policy displays evidence of the following forms of climate-related analysis: climate change vulnerability assessments, social vulnerability assessments, risk and resilience analysis, gender-sensitive risk and resilience analysis.

			10D	Policy displays evidence of the following forms of conflict-related analysis: conflict/conflict-sensitivity analysis, driver mapping, pro-peace analysis.
11.	Implementation	Action plan	11A	Policy includes an action or implementation plan that is implicitly or explicitly related to the mitigation of climate-related security risks
			11B	Policy includes a budgetary/financial mechanism implicitly or explicitly related to the mitigation of climate-related security risks to facilitate action or implementation plan
12.	Implementation	Policy adaptivity	12A	Policy specifies signposts for monitoring changes in the policy context to identify information that should be tracked in order to determine whether reorientation or corrective action is required
			12B	Policy specifies or identifies triggers for contingency plans, reorientation, or corrective actions (such as a relevant variable being measured reaching a critical mass)

Table 1. Policy assessment framework

Results

A total of 29 policy and strategy documents were assessed as part of this analysis. Policies produced prior to 2010 were not included in the initial dataset in order to ensure the relevancy of the results, and in order to reflect the fact that the topic of climate security still represents a fairly new thematic intersection for many (Conway, 2021). Documents were extracted from government agencies and institutions active in sectors that are related to the climate security nexus (table 2). It is important to note in this regard that the number of documents extracted for each sector hinged upon policies and strategies actually having been produced by the relevant institutions within the temporal scope of this analysis and their online accessibility, meaning that the amount of documents extracted per sector does differ. To qualify, a document had to have constituted either a formal policy or a formal strategy output produced by a policymaking or governance entity at the national or regional level. This excluded grey literature or third party analyses or evaluations of policies and strategies.

Policy Sector	Total no. of national-level policies	Total no. of regional-level policies	Total no. of policies
Climate and Environment	8	1	9
Agriculture, Livestock, and Fisheries	3	0	3
Disaster Risk Reduction	0	3	3
Development	8	1	9
Peace, Security, and Social Cohesion	2	3	5
	21	8	29

Table 2. Policy and strategy document dataset.

These documents were assessed against the backdrop of the evaluation categories and benchmarks visible in table 1. For each benchmark, a document received either a 0 (if the attached conditions were not met) or a 1 (if the attached conditions were successfully met). In order to fulfil an evaluation category, a document must have met the criteria associated with at least 50% of the respective benchmarks that make up each category. Thereafter, for each category, a document was assigned either a 0, if the average score of all benchmarks comprising it was smaller than 0.5, or a 1, if this average was larger than 0.5. Based on these category scores, aggregations were made by policy sector, by year and by actor. Aggregated documents that fulfilled these evaluation categories were represented through pie charts to analyse the extent to which they were fulfilled across the database and to visually represent the combinations and proportions of benchmarks which allowed to fulfil them. Pie charts were also made to represent these benchmark combinations by sector. Category scores were further averaged out across all the dataset to create overall average scores by sector, which

were represented through bar charts. These overall average scores were also aggregated by year and by category type and plotted on scatter plots in order to represent temporal variations of climate security policies acknowledgment and implementation scores.

This section discusses the results of the coding process. Four key observations and trends were identified on the basis of empirical analysis conducted on the dataset of documents and the coding matrix. Firstly, when examined across all scales and sectors, Senegalese and West African policy documents subjected to analysis received much lower scores for implementation-related categories than they did for acknowledgment-related categories (figure 4). This trend remains consistent over the period of time the analysis is concerned with, the two meta-categories broadly running in parallel to one another (figure 5).

The vast majority of policy documents made reference to at least one other policy document or process enacted at the same level of governance (horizontal acknowledgement), whilst over half demonstrated evidence of engagement or integration with a policy or process occurring at another level of governance (vertical acknowledgement). Over two-thirds of policy documents were found to discuss climate and environment-related issues (thematic engagement: climate), whilst just under half contained references to peace and security-related issues (thematic engagement: peace, security, conflict). Finally, a majority of documents were also found to contain language that was considered evidence of operating at least to some extent on the basis of the logic of adaptive policymaking (policy adaptivity) (figure 4).

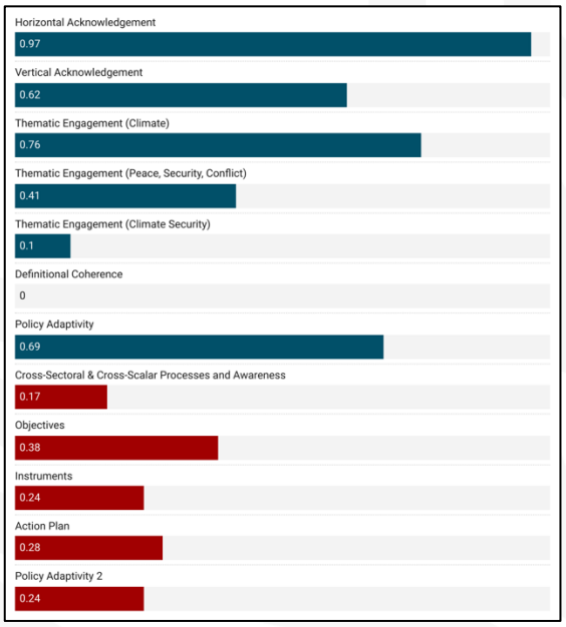


Figure 4. Total average coherence and awareness scores disaggregated across analytical categories.

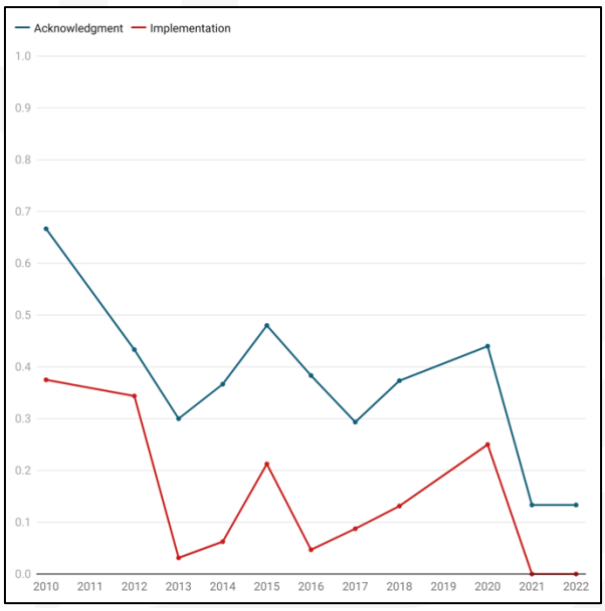
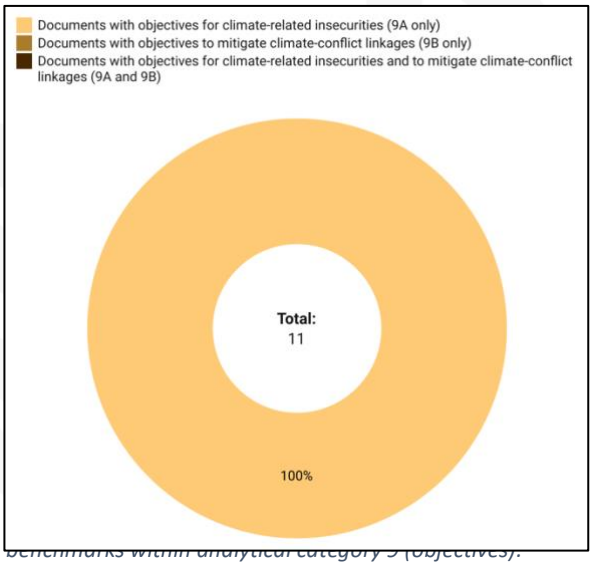
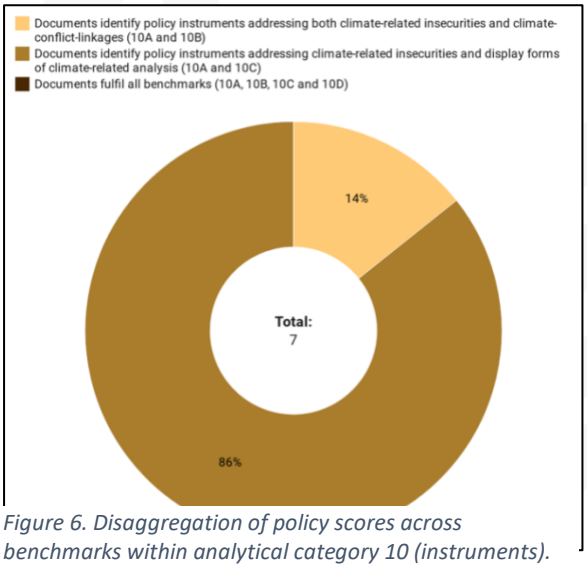


Figure 5. Total average coherence and awareness scores disaggregated across acknowledgement and implementation meta-categories, plotted over time.

Figure 4 also captures how policy documents were far less likely successfully fulfil implementation-related categories, recorded in red. Comparatively few policies demonstrated evidence of outlining climate security-sensitive policy objectives, proposed specific policy instruments through which said objectives could be achieved, contained an action plan with specific, costed planned activities and programmatic interventions relating to climate security, or actually operationalised the concept of adaptivity by recording signposts and triggers for monitoring potential changes in the operating environment for which a change in response may be needed. It is also notable that less than a fifth of total documents were found to display evidence of specific instruments, structures, or work processes that relate to improving coherence between ministries or other implementing partners – either at the same or between different levels of governance.

A more granular picture emerges when results are disaggregated to the benchmark level for each of the implementation-related categories. The presence and nature of policy objectives outlined in the analysed documents were evaluated on the basis of two individual benchmarks, centred around assessing objectives that are related to managing or mitigating climate-related insecurities (benchmark 9A), and objectives designed to mitigate climate-conflict linkages specifically (benchmark 9B). Fulfilling both of these categories was considered evidence of climate security-sensitive objective setting. Around a third of the policies subjected to analysis – and the majority of the climate and environment policies – were found to outline objectives relating to reducing climate-related insecurities. However, no documents were found to outline objectives related to mitigating climate-conflict links specifically, and no policy fulfilled both benchmarks (figure 6).





benchmarks within analytical category 9 (objectives).

Figure 6. Disaggregation of policy scores across benchmarks within analytical category 10 (instruments).

Category 10 in the policy analysis framework was designed to evaluate the presence of particular policy instruments – including, for example, specific programs, initiatives, capacity building, or regulations – that address either climate-related insecurities, climate-conflict linkages, or both. The category also contains benchmarks that record whether a policy document has demonstrated the use of climate-related analyses (including climate change vulnerability assessments, social vulnerability assessments, risk and resilience analysis, gender-sensitive risk and resilience analysis) and peace and conflict-related analyses (such as conflict/conflict-sensitivity analysis, driver mapping, pro-peace analysis) to feed into the establishment of baseline context assessments and programme design.

Figure 7 shows how only a minority (24.14 %) of documents fulfilled at least 50% of the benchmarks contained in category 10. Within the analysed dataset, the majority of documents therefore did not demonstrate evidence of outlining policy instruments aimed at either mitigating climate-related insecurities or climate-conflict linkages whilst also deploying at least one form of either climate- or peace and conflict-related analyses. Out of the seven policy documents that did meet the requirements of at least two of the benchmarks, six documents (86%) contained an instrument designed to reduce climate-related insecurities (for instance through enacting adaptation or sustainable livelihood strategies) that appeared to be based on previously conducted climate-related analysis. Only one document was conversely found to contain a policy instrument designed to address both climate-related insecurities and potential climate-conflict linkages, yet the robustness of this intervention is questionable as it was not found to be backed up by a conflict-related analysis. No policy document was found to fulfil all four benchmarks, suggesting that the deployment of integrated climate and conflict analysis is absent and therefore does not feature in either objective setting or in the design of specific interventions.

Finally, category 11 in the policy analysis framework was designed in order to evaluate the presence and climate security-sensitive nature of action plans within policies and strategies. Analysis focused on the specific projects and activities to be implemented over a certain period of time that were outlined in each action plan, which were assessed on the basis that they were designed either to mitigate climate-related insecurities (benchmark 11A) or for the purposes of mitigating climate-related security risks specifically (benchmark 11B). This category also contained two benchmarks to evaluate whether these activities were costed, thereby evaluating whether a budgetary or financial provision was made for either of the above (benchmarks 11C and 11D). The coding results revealed – in line with previous findings – that of the 7 policies that contained an action plan in which projects related to climate change adaptation or mitigation were recorded, all fulfilled benchmarks 11A and 11C. No action plans were found to contain projects related explicitly to the reduction of climate-

related security risks, and no policy fulfilled all of the benchmarks, meaning that integrated programming was also found to be absent (figure 8).

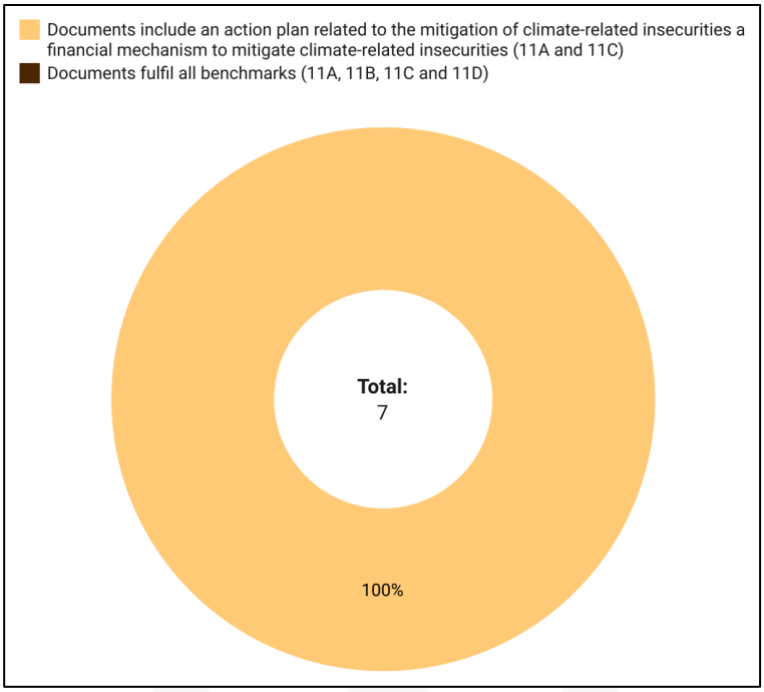


Figure 8. Disaggregation of policy scores across benchmarks within category 11 (action plans).

A second clear trend emerges at the aggregate level of results in terms of the extent to which policy documents tend to conceive of and engage with climate and environment- and peace and security-related issues. Whilst over a third of all policies fulfilled the analytical framework's requirements of substantially engaging with climate and environmental issues (thematic engagement: climate) – and just under half of all policy documents analysed engaged with issues related to peace and security (thematic engagement: peace, security, conflict) – discussion of how and where these two areas may intersect is almost entirely absent (thematic engagement: climate security) (figure 4). Whilst the separate components of the climate security nexus are therefore at least to some extent present in the assessed policy documents, the interface of climate and conflict (or conversely climate and peace) is discussed in only 3 policy documents (10.34% of total documents) (figure 9). It is also worth noting how no policy or strategy document fulfilled category 6 (definitional coherence) (figure 4), suggesting that appropriate conceptual understandings of the climate-conflict interface are largely absent in policies and strategies from sectors that are nonetheless highly relevant to the climate security nexus.

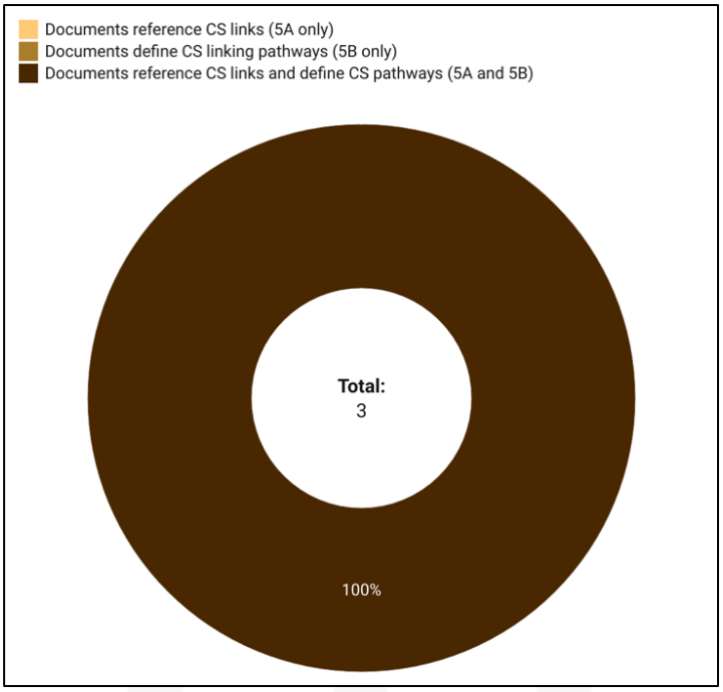


Figure 9. Disaggregation of policy scores across benchmarks within analytical category 5 (engagement: climate security).

Figure 9 disaggregates the 'thematic engagement: climate security' category into its individual benchmarks. These benchmarks are designed to capture the extent and depth with which a document demonstrates awareness of the climate-conflict interface, ranging from discussing climate-conflict linkages at a surface level (benchmark 5A) to outlining specific climate-conflict pathways and mechanisms, such as natural resource conflict (benchmark 5B). Despite the comparatively small number of documents that successfully fulfilled at least 50% of these benchmarks, it is notable how all 3 of these documents fulfilled both benchmarks and therefore appear to display a more in-depth understanding of how climate-related security risks emerge. The overall frequency with which climate-related security risks and mechanisms are present in the policy documents remains, however, exceedingly low.

A third key trend emerges when the coding results are disaggregated across categories and policy sectors. Despite there being clear trends regarding the extent and nature of engagement with the climate security nexus that became apparent at the aggregate level, certain sectors did perform better than others according to the policy analysis framework (figure 10). It is clear that policies related to disaster risk reduction (DRR) and extracted from the disaster management sector are the most consistently highest scoring. The total average score achieved by documents produced within the DRR sector is 0.55, which is substantially higher than climate and environment, the next highest sector (0.34). In fact, DRR policy

documents achieved the highest or joint highest average coding score in all but one of the analytical categories (policy adaptivity).[2]

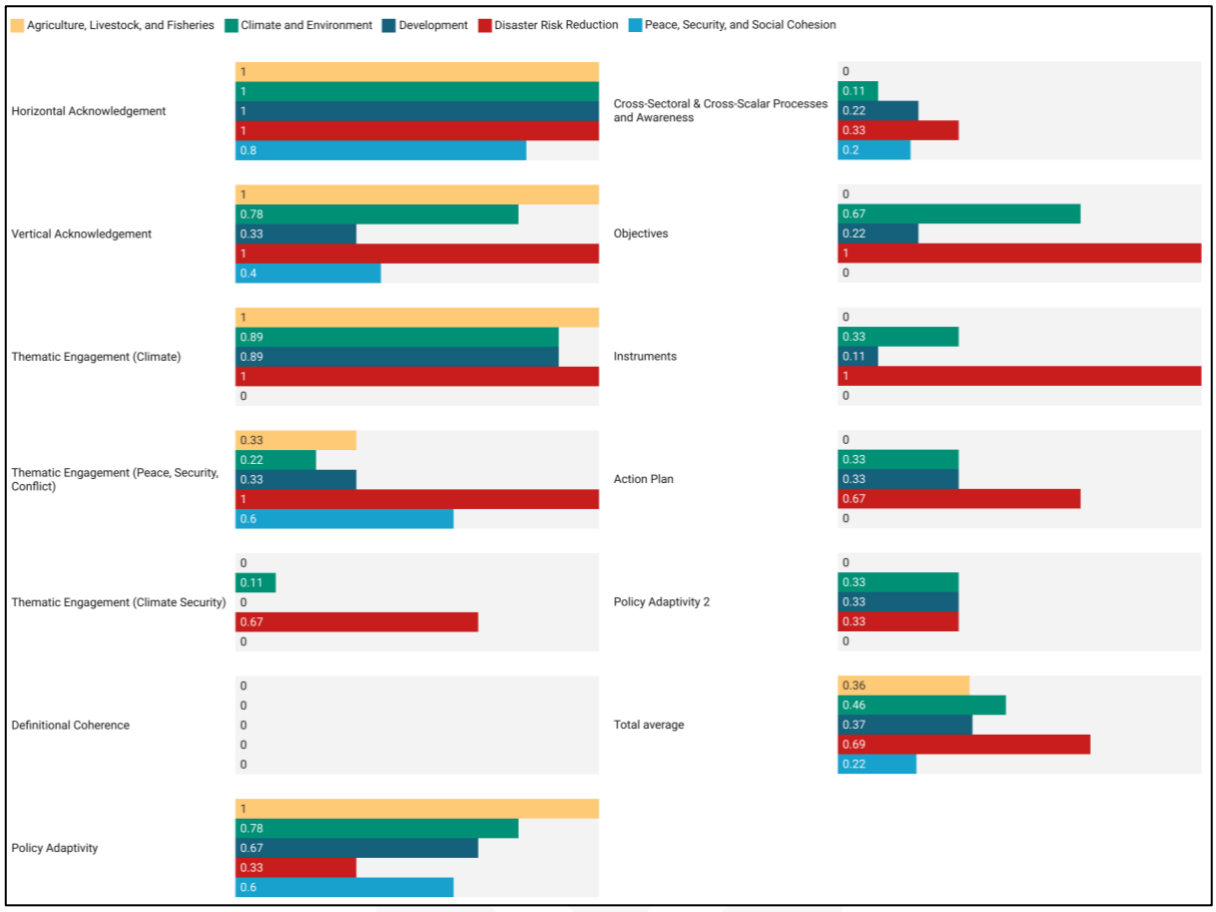


Figure 10. Total average coherence and awareness scores disaggregated across analytical categories and sectors.

The DRR policy documents that were subjected to analysis are, furthermore, well-integrated across scales of governance, making reference to both regional and national risk management processes (horizontal and vertical acknowledgement); the most likely to contain explicit, climate security-sensitive objectives as well as the policy instruments and action plans to help achieve these objectives (objectives, instruments, and action plan); and, crucially, it is nearly the only sector that consistently demonstrated engagement with the intersection of climate and security (thematic engagement: climate security). The only other sector that displayed

[2] It must be noted, however, that the sample size for DRR documents was lower than the number of documents extracted from some other sectors. Nevertheless, this trend is also visible in analysis conducted in other national contexts, such as Kenya (see Schapendonk et al., publication pending).

some level of engagement with the climate security nexus was climate and environment, though this engagement was very limited.

The disproportionate degree to which DRR policy documents appear to outperform the other sectors that were included in this analysis may suggest that climate-conflict linkages – when they are conceptualised – are usually considered and planned for as a consequence of shocks and sudden-onset environmental events, such as droughts or flooding. Incorporation of climate-related security concerns into such strategies is critical. Communities and households lacking the adaptive capacity to weather the ecological and socio-economic shocks of extreme weather events (including, for instance, the cost of agricultural inputs) are arguably more likely to engage in maladaptive and sometimes violent coping strategies. This is particularly likely in circumstances where the state is unable or unwilling to provide safety nets for affected communities, either through anticipatory mechanisms or through crisis response activities (Savelli et al., 2022). However, the inverse is also true in that DRR strategies that do take active steps to ensure they are sensitive to pre-existing structures of inequality and social conflict – and how such structures may condition the ways in which the impacts of extreme weather events may be experienced and play out – can help prevent cascading climate-conflict effects.

An example of this comes in the form of the Economic Community of West African States (ECOWAS) Disaster Risk Reduction Gender Strategy and Action Plan 2020-2030. This strategy – constructed around the four priority areas of the 2005 Sendai Framework – highlights the need for technical analyses to understand the gendered nature of disaster risk, considering the unique needs of women and men, girls and boys; emphasises empowering women with the opportunities and agency to fully participate within institutional arrangements and policy formulation; and ensure equitable resource allocation and targeted actions to promote gender equality when investing in disaster risk reduction for resilience. Whilst this strategy does not explicitly target climate-conflict linkages, it does contain components that are critical to take into consideration when designing a climate security-sensitive disaster risk policy, such as conducting intersectional analyses with regards to how climate impacts are likely to occur and including marginalised groups or individuals into decision-making and policy formulation processes.

However, it also appears to be the case that efforts to cope with or mitigate the more slow-onset impacts of climate change – such as sector-specific adaptation strategies or nationally determined contributions (NDCs) respectively – do not engage with climate-related security risks to the same extent as DRR policies. There was little evidence to suggest that policy documents from the climate and environment sector, for example, attempt to mainstream conflict-sensitivity or take into account the role that adaptation and mitigation efforts can play in contributing to a climate-resilient peace into their objective setting or program design.

Limiting the conceptualisation of how climate impacts may increase the risk of violent conflict to sudden-onset climatic events and responses to these precludes consideration of how slower-onset climate impacts may contribute to human insecurity and therefore indirectly to conflict and instability. This may imply a tendency on behalf of the Senegalese government and supra-regional organisations to place a much greater legislative emphasis on preparing for and managing the destabilising impacts of fast-onset environmental impacts, rather than undertaking a systematic exploration of how longer-term climate adaptation and mitigation strategies can contribute to sustaining peace and building social cohesion if enacted in a conflict-sensitive and pro-peace manner. This represents a missed opportunity for maximising the positive externalities of climate-related policies and programming.

Fourthly, disaggregating the coding results across the different scales of governance reveals that the regional bodies that were assessed as part of this analysis – namely, the Permanent Interstate Committee for Drought Control in the Sahel (CILSS) and ECOWAS – achieved higher total average scores than policy documents produced by Senegal at the national level (figure 11). When interpreting these results, it is firstly important to note, however, that the sample size for regional level documents was smaller than for national level documents, meaning that there are less potential datapoints. Secondly, it is clear that policy and strategy documents produced by CILSS and from ECOWAS – although on average outperforming national level policy documents – did so in different ways. Figure 12 – which visualises the breakdown of average scores across scales and thematic categories – demonstrates for instance how although CILSS documents discuss both climate change-related issues and peace and security-related issues, the interface and intersection of these issues is entirely absent. By contrast, documents produced by ECOWAS – albeit with a slightly lesser frequency - also discuss both of these dimensions and are the most successful in conceptualising climate-conflict linkages (thematic engagement: climate security), although implementation-related measures do appear to be lacking.

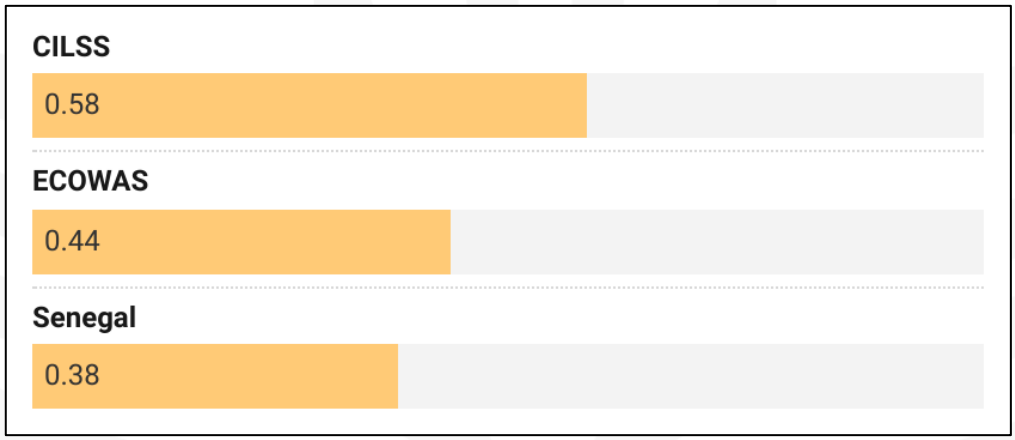


Figure 11. Total average coherence and awareness scores disaggregated across scales and actors.

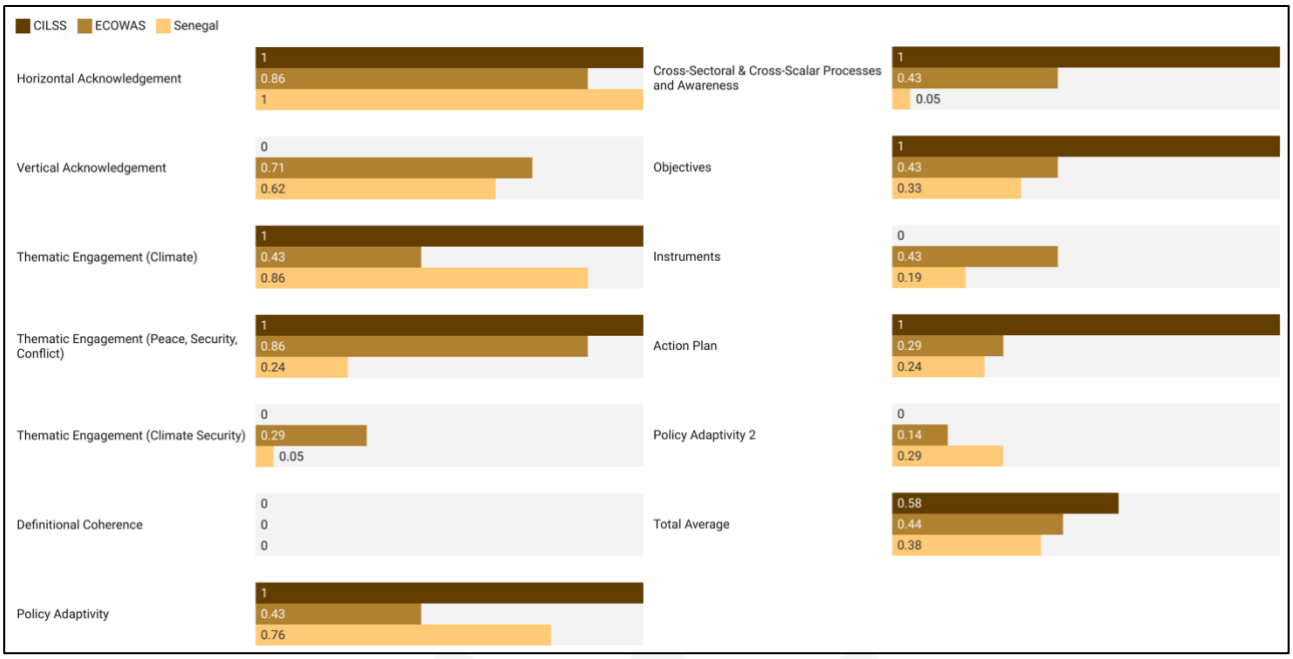


Figure 12. Total average coherence and awareness scores disaggregated across scales, actors, and analytical categories.

Differentiation across scales also draws attention to the fact that whilst all policies score highly for horizontal acknowledgement, CILSS policies and strategies do not demonstrate any evidence of integrating with policies operating at different scales of governance (vertical acknowledgement). In terms of demonstrating evidence of, being a product of, or calling for the creation of a cross-sectoral or cross-scalar coordination process or body, it is also particularly evident how Senegalese policies appear to fall short in this regard. Whilst further research is needed to explore the institutional structures within and across climate security-relevant sectors in Senegal, analysis of policy documents does suggest that institutional spaces for coordination specifically on climate security-related matters are lacking (or existing spaces are not currently utilised for this purpose).

At first glance, CILSS documents appear to be the most successful with regards to the implementation-related evaluation categories, having achieved the highest total average score for the objectives, instruments, and action plan categories. However, when these categories are disaggregated to the benchmark level (figure 13), it becomes clear that the vast majority of these categories were fulfilled due to CILSS policies and strategies containing objectives, instruments, and action plans that are responsive particularly to climate-related insecurities (benchmark 9A), rather than pooling climate- and peace and security-related concerns in an integrated manner (benchmarks 9A and 9B, which no policy document achieved).

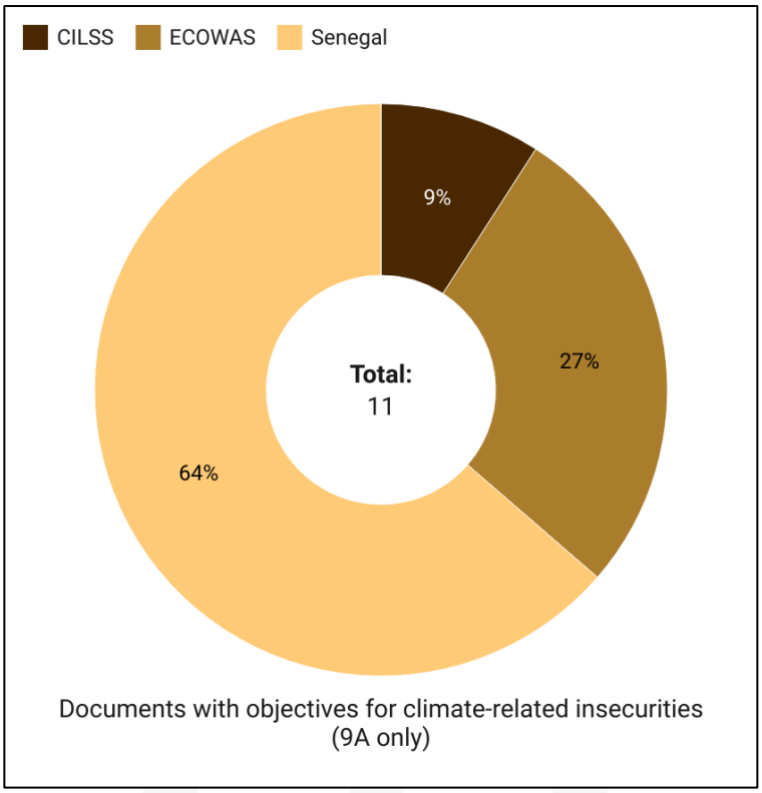


Figure 13. Disaggregation of policy scores across benchmarks within analytical 9 (objectives) and across actors

A similar picture emerges with regards to category 10 (instruments) and category 11 (action plan). Figure 14 demonstrates how whilst one Senegalese document produced at the national level did appear to identify a policy instrument that addressed both climate-related insecurities and climate-conflict linkages, its robustness is questionable as this was not reflected in the policy's objectives or backed up by appropriate baseline analysis and assessment (as previously discussed). Figure 14 also reveals that although 6 documents (including the one previously mentioned) did fulfil category 10, none of the proposed instruments actually addressed both climate-related insecurities and climate-conflict linkages. These documents fulfilled at least 50% of the benchmarks as they contained measures to mitigate climate-related insecurities and displayed evidence of having conducted a form of climate-related analysis. Peace and conflict-related analysis was entirely absent.

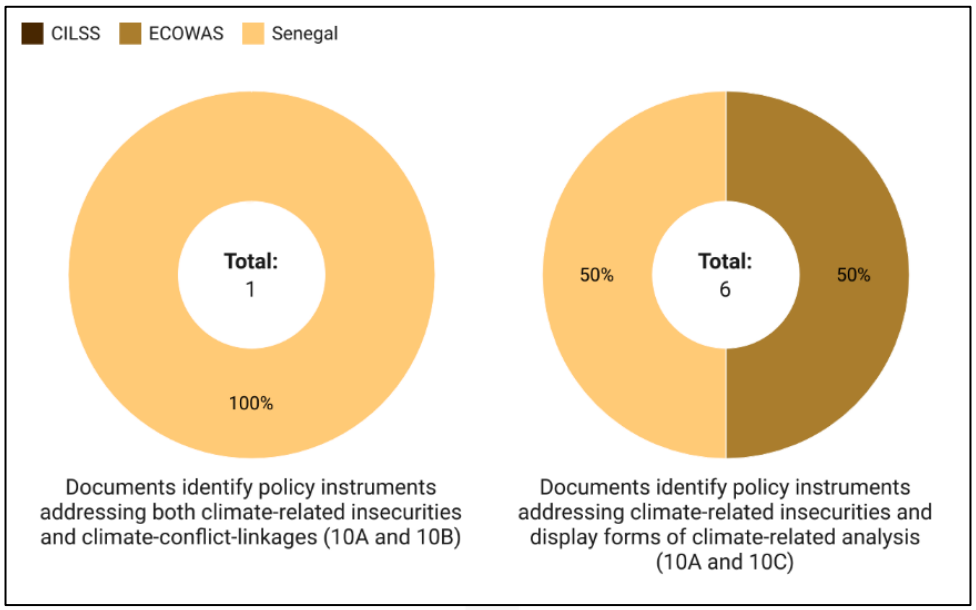


Figure 14. Disaggregation of policy scores across benchmarks within analytical category 10 (instruments) and across actors

With regards to the presence of climate security-sensitive action plans, the same trend emerges. A total of 7 documents included an action plan containing specific activities related to the mitigation of climate-related insecurities, accompanied by a financial mechanism to fund these activities (figure 15). However, no documents were found to contain an action plan with specific programmatic activities designed to mitigate climate-conflict linkages or maximise climate-peace opportunities.

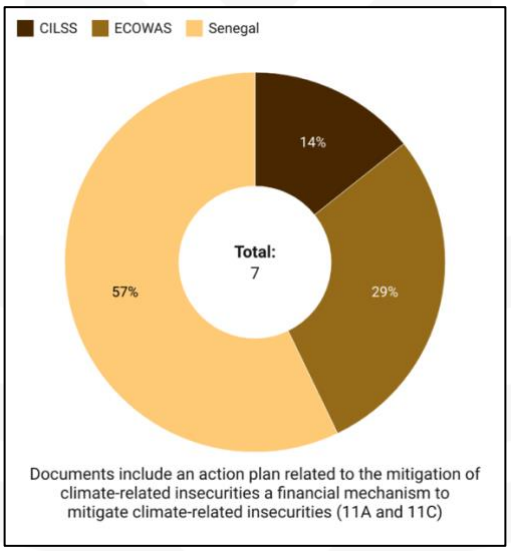


Figure 15. Disaggregation of policy scores across benchmarks within analytical category 11 (action plan) and across actors

To summarise, therefore, regional level policy and strategy documents achieved higher total average coherence and awareness scores predominantly as a consequence of being more successful with regards to making provisions for implementation. However, when examined at the benchmark level, it is clear that documents met the 50% benchmark fulfilment requirement mainly due to them being more likely to operationalise interventions designed to mitigate to climate-related insecurities, rather than fulfilling the benchmarks designed to capture integrated climate-conflict objectives, instruments, or action plans. These results suggest that climate security-sensitive programming remains elusive at the regional level too, although documents extracted from ECOWAS did demonstrate evidence of a marginally better engagement with climate-related security risks. It may also indicate that – although more research is needed to conclude this – that regional level initiatives that currently are more successful at operationalising programming to mitigate climate-related insecurities offer entry points to incorporate conflict-sensitive and pro-peace programmatic components. Activities undertaken to build sustainable livelihoods, for example, may possess the potential to better articulate and make provisions to manage positive spill over effects for peace and social cohesion.

In addition to conducting empirical analysis on the final coding matrix, a secondary analysis was also undertaken specifically on the content of the documents using a textual analysis approach. Whereas this study has thus far primarily sought to conduct analysis from a normative perspective (evaluating documents based on how they *should* integrate the topic of climate security), this particular line of inquiry conducts analysis from a positive perspective (ascertaining *how* policy documents currently appear to understand key topics related to climate security). To do this, we – firstly – undertook a network analysis to produce a set of keyword clusters, centred around the words 'climate', 'peace', and 'security/conflict/violence'. The construction of a keyword network in this way gives an indication of the topics that are most commonly discussed in proximity to the keywords previously outlined, allowing for an assessment of how these topics actually are addressed within policy documents.

Figures 16 and 17 show co-occurrence networks of words occurring near either climate, security, peace, or conflict. Figure 16 captures national-level documents, whilst figure 17 shows regional-level documents. The networks include words with a frequency higher than 3 and a node size (I.e., number of connections with other words) greater than 70 for the national-level corpus and 15 for the regional-level corpus. The words included in these two images, which are discussed in documents in relation to both a security and climate perspective, can be seen as actual or potential thematic entry points for integrated, climate sensitive programming interventions.

A comparison of the national- and regional-level co-occurrence networks shows areas of convergence and divergence with regards to thematic engagements and correlations. For instance, it appears that the word ‘climate’ co-occurs in both cases with the topic of development, while at the national level it appears that there is greater affiliation between ‘climate’ and the topics of agriculture, vulnerability, resilience, and adaptation. Conversely, regional level documents that discuss climate-conflict linkages appear to be more centred on the intersections between climate and gender or disaster and risk reduction.

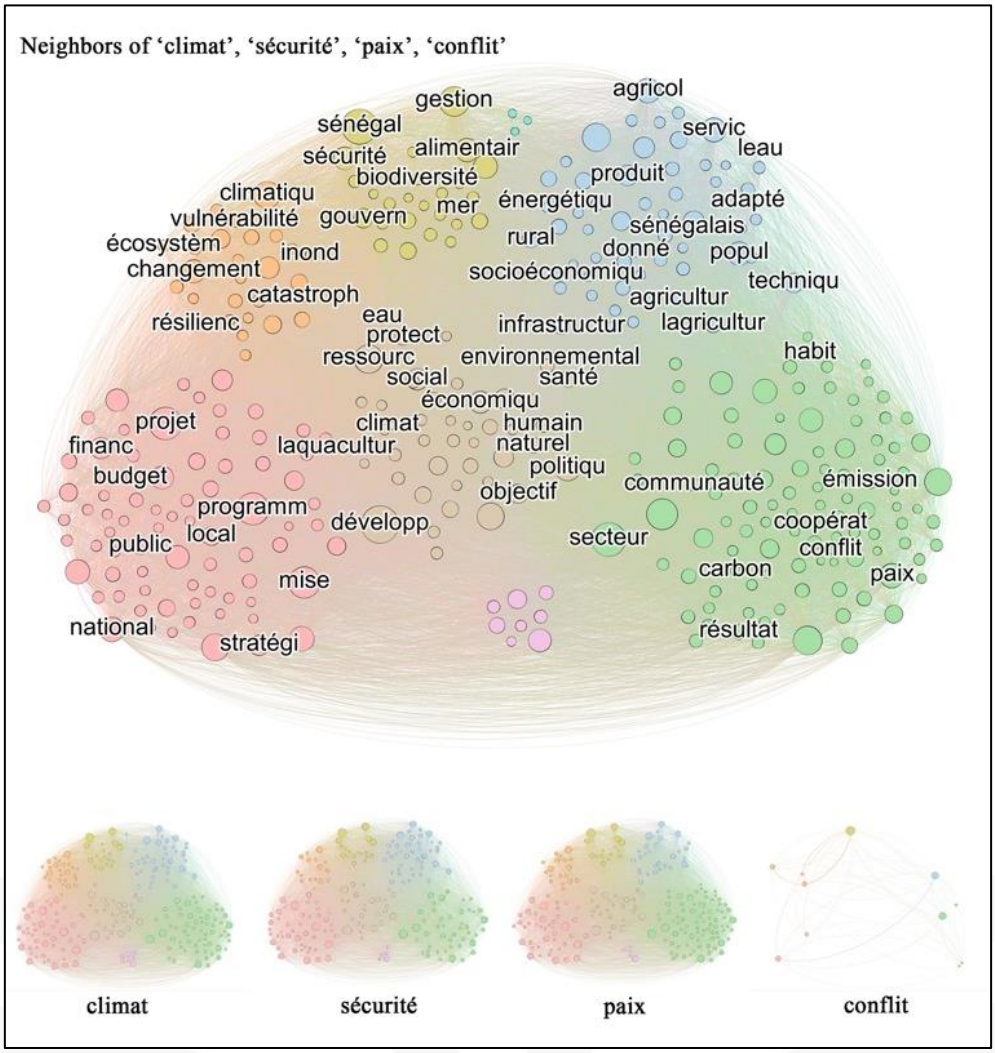


Figure 16. Word co-occurrence network from national level documents

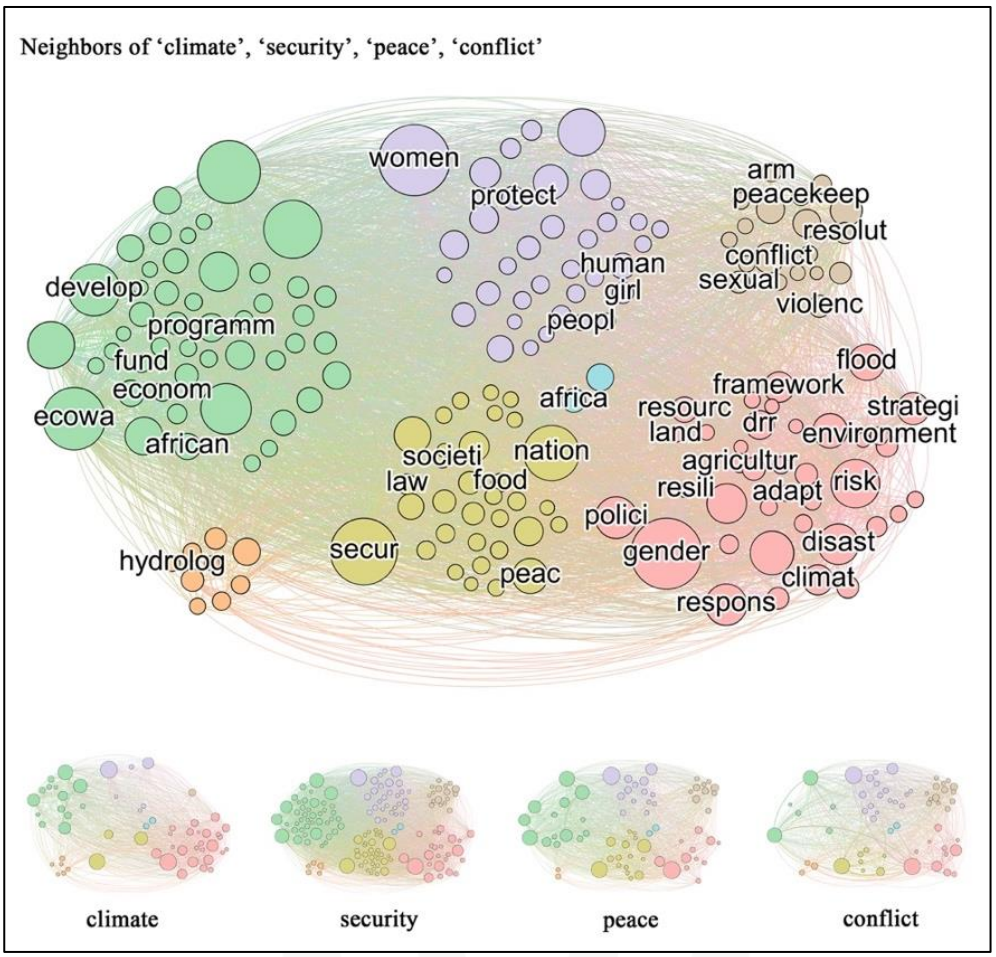


Figure 17. Word co-occurrence network from regional-level documents.

Additional textual analysis was also conducted to investigate correlations among words related to climate security across sentences from all documents. The utility of correlational analysis lies in how it helps us better understand the context in which certain words appear, and how they relate to other key concepts. Key findings include how the word 'climate' is positively correlated to 'instability', 'precipitation', 'ocean', 'flood' and 'biodiversity'. Conversely, it seems that words related to security and conflict have no significant correlation at the sentence level with the presence of the word 'climate' (figure 18). This suggests that although the destabilising effects of climate change are perhaps recognised to a limited degree, the implications that climate change-related impacts may have for security and conflict are largely absent. Instead, security positively correlates to 'water' and negatively correlates to 'flood' and 'precipitation', whilst conflict and violence are conversely positively correlated with 'flood'. Overall, the correlation analysis suggests – in line with our previous analysis - that the climate-conflict nexus is discussed predominantly in relation to short-term whether events rather than long-term climatic changes.

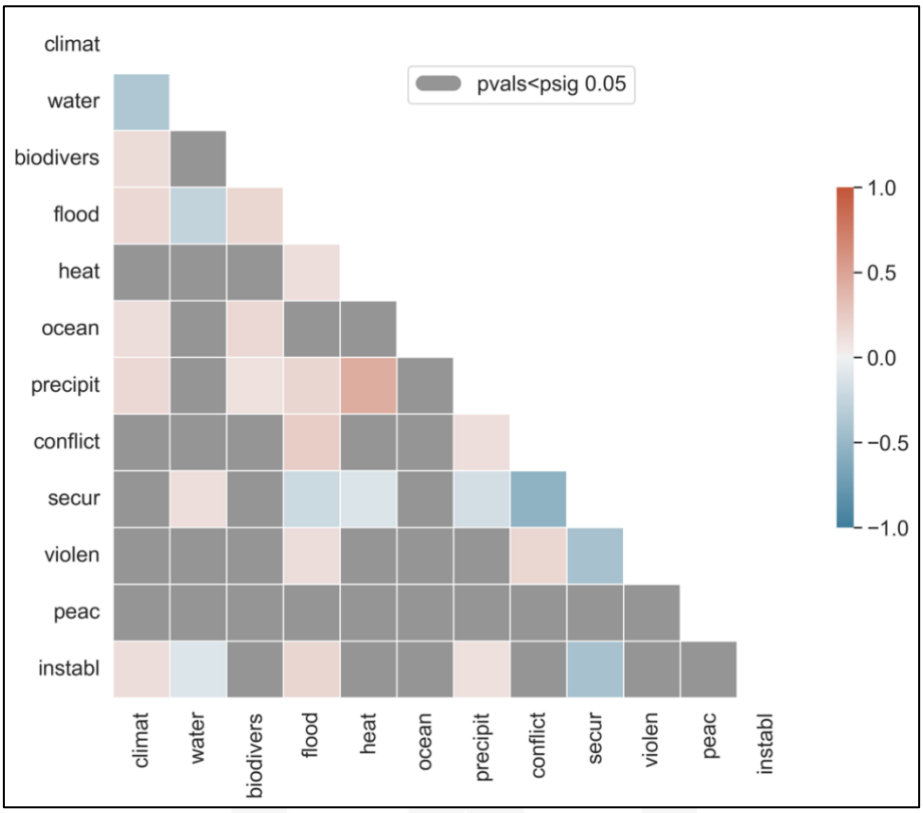


Figure 18. Correlation matrix for selected keywords in sentences related to climate security from all documents (French and English language).

Finally, figure 19 plots the frequency with which selected words related to climate security were found within policy and strategy documents over time. Words related to environment and climate change surged in 2015 and peaked in 2018, an increase driven by the publication of the the “Troiroisième Communication Nationale du Senegal a la Convention Cadre des Nations-Unies sur les Changements Climatiques” by the Ministry of Environment and the “Programme Pays" by the Ministry of Sustainable Development respectively. Overall, it appears that documents related to the UNFCCC, such as National Communications and Nationally Determined Contributions, contributed significantly to increase the net number of references to climate change and related words in the overall corpus of text. Other significant contributions to the climate discussion have also been made by the Ministry of Environment and Sustainable Development and the Ministry of Economy, which have mentioned climate change within various national development plans since 2015. Discussions related to violence and peace have instead been driven by ECOWAS, more specifically by the 2016 “Policy Framework on Security Sector Reform and Governance” and the 2020 “Guidelines on Women Peace and Security” and “Disaster Risk Reduction Gender Strategy and Action Plan.”

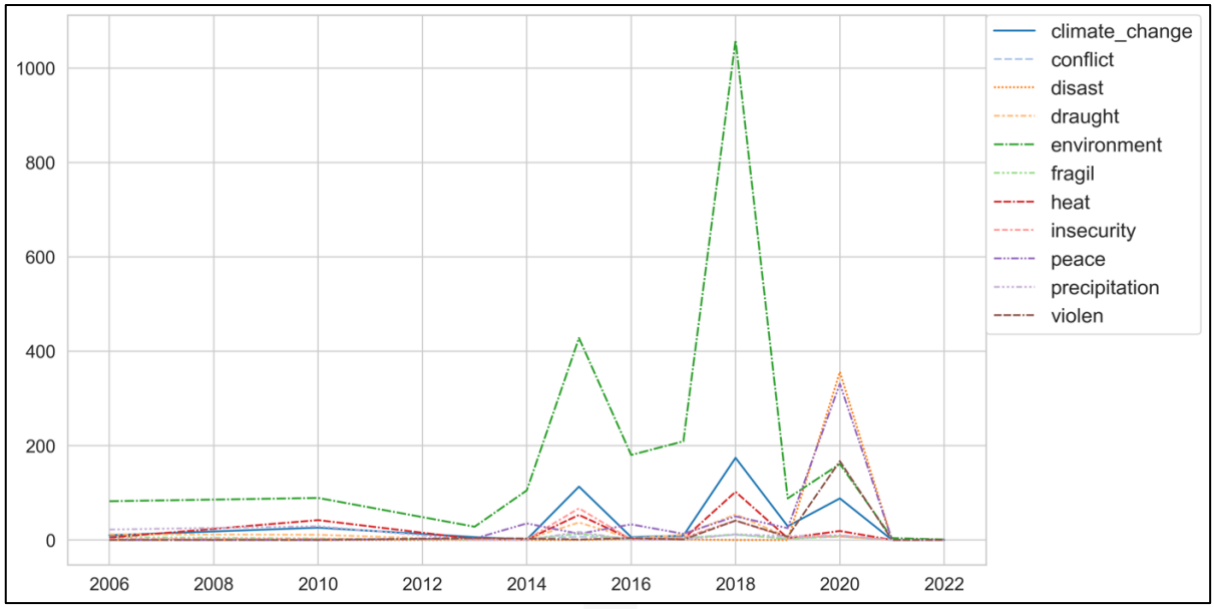


Figure 19. Frequency of selected keywords across all documents (French and English language) over time.

Conclusions and Recommendations

Several key conclusions can be drawn from the above discussion of the coding results. Firstly, overall total average coherence and awareness scores are low, with no actor at national or regional levels achieving more than 0.5 out of 1 when all evaluation categories are taken into account. Moreover, it is clear that within these low scores, policy and strategy documents subjected to analysis were far more likely to fulfil acknowledgement-related than implementation-related categories according to the policy analysis framework. This likely suggests that policies and strategies from the sectors included in this analysis struggle to translate potential concerns with climate-conflict linkages into programmatic realities. However, an examination of the varying degrees to which different acknowledgment-related categories were fulfilled further complicates the picture, as it suggests that overall conceptual awareness of climate security remains low.

It is evident that policy and strategy documents do discuss in a fairly consistent manner both climate change- and peace and security-related issues and factors. Yet these discourses are very rarely tied together and their interlinkages almost never recognised. Very few documents displayed evidence of engaging with the climate-conflict interface, and even fewer were found to put forward clear definitions of climate security that operated on the basis of human security or threat/risk multiplier narratives. This argument is backed up by the findings of the textual analysis, which suggest that words relating to peace, security, or conflict have no correlation with the word 'climate' in a sentence. Overall, our results therefore suggest that mainstreaming of climate security considerations into key policy and strategy outputs from across sectors relevant to the nexus is incredibly limited. This may suggest that there exists an equally limited awareness amongst policy- and decisionmakers with regards to the topic of climate security.

Secondly – given the comparatively low scoring of implementation-related categories – our findings suggest that programmatic interventions that explicitly incorporate climate-related security considerations into their design, objectives, and implementation are mostly lacking. No document was found to contain objectives or goals that explicitly relate to addressing potential climate-conflict linkages or maximise climate-peace opportunities. Regarding the development of specific policy instruments – such as … - only one document appeared to have put forward an instrument which explicitly included climate security considerations, yet the robustness of this intervention may be questionable given how this was not backed up by a conflict-related analysis, nor was it reflected in the overall goals and objectives of the document. Generally speaking, therefore, the design of programmatic interventions that display an explicit awareness of climate-related security risks and how to manage or mitigate these remains a challenge.

This, moreover, speaks to a broader shortcoming within the documents subjected to analysis, namely, the widespread lack of conflict-related analysis that should feed into the planning and design of interventions. No evidence was found for a policy or strategy document deploying both a climate-related analysis or baseline assessment – such as a climate vulnerability assessment – *and* a conflict or pro-peace analysis, whilst no documents were found to have deployed a conflict or peace analysis. This arguably calls into question the degree to which programs proposed as part of policy initiatives can be deemed conflict sensitive. This is a crucial issue, for if programs are designed and implemented without consideration for conflict potential, unforeseen negative spill over effects may change economic development processes, undermine political stability and exacerbate marginalisation, or fray the social fabric of communities (Dabelko et al., 2013).

Thirdly, our analysis reveals how certain sectors are clearly stronger or weaker than others with regards to coherence and awareness of climate-related security risks. Policy and strategy documents extracted from the DRR sector were found to be most successful in terms of demonstrating evidence of coherence and awareness in relation to climate security, whilst peace and security documents were the weakest. As previously noted, the fact that consideration of the potentially destabilising effects of extreme weather events is present in DRR documents is reassuring, and represents a step in the right direction in terms of mainstreaming climate security considerations across key policy outputs and processes. Adequate preparation for and recovery from environmental shocks can help prevent these shocks from triggering cascading risk processes in which implications for human security may eventually morph indirectly into conflict risk.

Conversely, however, the absence of climate security considerations in policies and strategies relating to mitigating climate impacts or adapting to slow-onset climate change-related impacts may point to a missed opportunity to maximise the positive externalities of such activities. Adaptation and mitigation programs can, for instance, be explicitly pro peace and help address structural inequalities experienced by disproportionately vulnerable groups and individuals, form an entry point for conflict prevention and conflict transformation activities, or provide opportunities for economic development. Again, taking the example of REDD, such initiatives can if correctly implemented contribute to economic development generating new sources of revenue; incentivise the improvement of governance capacities as a prerequisite for receiving for anti-deforestation projects; and foster cooperation, dialogue, and confidence-building at all levels (Tänzler et al., 2013). Evaluation of the policy and strategy documents subjected to analysis in this study therefore suggest that policies and strategies related to climate action – particularly longer-term adaptation and mitigation initiatives – could integrate peace and security considerations to a much greater degree.

Fourthly, policy and strategy documents subjected to analysis within this report were found to demonstrate a very limited operationalisation of the principle of adaptivity. Climate-related security risks tend to be the product of multiple processes across different dimensions and both temporal and geographical scales - and agentic decision-making in response to these dynamics. This confluence of factors means that although the conditions under which the risk of climate-related conflict may increase can be to some extent determined, exactly how and when violence may occur is unpredictable and often simply unknowable. Furthermore, risk heightening – or, conversely, peace enabling – conditions may evolve over time. This means that systems of governance seeking to remain sensitive and responsive to climate-related security risk dynamics must create structures, processes, and capacities to build and maintain adaptivity. Adaptive capacity can be defined as the ability of a governance system to first alter processes and if required convert structural elements as a response to experienced or expected changes in the societal or natural environment (Carlisle & Gruby, 2019; Pahl-Wostl, 2009). A system can change rules and behaviours as it learns and evolves in response to its environment, of which policies are an important component as these represent interventions into said environment. Ensuring that the infrastructure for adaptivity (such as regular learning, the transmission of information, and experimentation) is embedded in policies and strategies is therefore critical. Very few policies produced by Senegal or the regional bodies in this analysis, however, successfully embedded the learning, experimentation, and readjustment that policymaking in complex environments requires.

Finally, our results also suggest that regional governance bodies – in our case, CILSS and ECOWAS – achieved higher total coherence and awareness scores than Senegalese policy documents produced at the national level. Aside from policy and strategy documents produced by ECOWAS displaying a slightly higher tendency to engage with climate security-related topics, this score discrepancy can largely be explained by the fact that regional level documents were more likely to make provisions for implementation of objectives, albeit related almost exclusively to climate-related insecurities rather than for the purposes of integrated climate security-sensitive programming. This, however, might suggest that regional level programmatic initiatives that are perhaps connected to national or sub-national level processes do offer potential entry points for the incorporation of climate security considerations.

This is particularly relevant in the context of West Africa. Senegal itself is a fairly stable country, ranking 70 on the Global Peace Index and the 10th most peaceful country in Sub-Saharan Africa (Institute for Economics and Peace, 2022). Yet the conflict that exists across West Africa and the Sahelian region is integrated to a large degree into a regional conflict system characterised by increasing political instability and presence of armed groups (Konrad-Adenaur-Stiftung, 2021; Schultes, 2022). Local conflicts are often being tied into factors and

processes that are more cross-border in nature, particularly in the context of climate change, where natural resources and livelihoods are progressively strained by a wide array of climate impacts, including the impact of drought on 50% of the arable land (Läderach et al., 2021). For instance. in the Lake Chad area, climate impacts aggravate existing challenges linked to armed groups and displaced population, both of which are cross-border in nature (Läderach et al. 2021).

This reality only serves to strengthen the mandate that regional bodies such as ECOWAS have in acting as a convening and coordinating body for its member states, particularly in promoting the development and implementation of conflict-sensitive and pro-peace adaptation and mitigation efforts. Such efforts could include, for example, information and evidence sharing mechanisms (both across sectors and across scales) for the purpose of assessing climate-conflict risks and mapping climate security hotspots. An existing example of this can be seen in ECOWAS's Early Warning and Response Network and its Peace Exchange Forum, which could be expanded to include climate security considerations. Based on these key conclusions, this report puts forward the following recommendations:

1) **Take steps to familiarise the topic of climate security amongst policy- and decisionmakers in order to mainstream climate security considerations throughout policy formation processes:** based on the fact that discussion of the climate-conflict interface is almost entirely absent in the majority of policy and strategy documents subjected to analysis, it is likely that the topic of climate security remains a fairly novel and niche subject within policy- and decision-making circles. In order to remedy this, external development and peace actors should work with national- and sub-national governance bodies and conduct training needs assessments (TNAs) to identify key gaps in knowledge, awareness, and capacities. On the basis of such assessments, tailored sensitisation and training programs should be developed that convey key concepts and approaches, build capacity with regards to making combined use of climate and conflict data, and teach key analytical capacities.

2) **Actively make climate part of the solution:** take steps to enlarge current understandings of how and where climate-related security risks can be mitigated beyond DRR approaches and strategies, particularly for adaptation programming designed to address longer-term climatic shifts. To do this, we recommend adopting a transformational lens to resilience building that takes into account place- and community-specific vulnerabilities. Making use of an intersectional lens when conducting baseline needs assessments, context analyses, designing program content, and evaluating impacts is likely to help build clearer a picture of how climate change-related impact is affecting different segments of a local community or population. This

data should in turn allow for the construction of locally grounded, integrated theories of change with regards to how climate action can simultaneously help address structural factors contributing to relational and disproportionate vulnerability and exposure to climate change-related impacts.

Programmatic initiatives to improve the sustainability and resilience of land, water, and food systems to external shocks cannot simply rely on a set of technocratic and apolitical interventions and technologies. To truly address vulnerability and build resilience, critical questions such as 'resilience for who', 'resilience at which scale', and 'resilience built how' will need to be answered (Ferguson, 2019). Building resilience to climate-related shocks and stressors is joined at the hip with efforts to address structural inequalities, as it is often these that give rise to relational and disproportionate vulnerability and exposure in the first instance.

To ensure the effectiveness of such resilience building programming, we also highlight the importance of deploying participatory approaches when seeking to understand local climate security specificities. One key approach that could yield significant utility in this regard comes in the form of social learning, an approach that can be broadly described as a process of social change in which actors learn from one another in ways that can help attain a set of common objectives, understandings, or objectives. Knowledge is in this case co-created between local communities and researchers or program planners in a reciprocal process of interaction, exchange, and negotiation with one another and one's environment, taking place within a specific social and physical context (Lave & Wenger, 1991). Given the complexity of potential climate-conflict linkages – and the multitude of ways through which such risks are experienced by different community members, which each likely to bring a particular perspective to how climate-related impacts are affecting the context in question – encouraging community members to partake in a collaborative process of negotiation can potentially facilitate the development of a common problem definition with key entry points for intervention.

3) **Mainstream adaptivity principles amongst policymakers and build the adaptive capacity of the systems of governance they are a part of to remain responsive to emergent climate-related security risks:** our analysis suggests that whilst many policies and strategies pay lip service to the principles of adaptivity and recognise at least at a surface level the need to embed adaptivity into policy formulation and implementation processes, operationalising this is much rarer. A distinct minority of policies and strategies, for instance, displayed evidence of having developed relevant

infrastructure and procedures within policy implementation to ensure adaptivity, such as including certain signposts (key data types and values that should be continuously monitored to record the effects an intervention is having on its environment), triggers (key thresholds that when reached trigger adjustment), or contingency plans (alternative courses of action). Furthermore, whilst policies and strategies scored comparatively high for the horizontal and vertical acknowledgement categories, further research is needed to capture whether policymaking units truly design and implement interventions in a manner that takes into account the actions of other decision-making units across different scales of governance to ensure coherence.

As such, a need appears to be present to build the capacity of policy- and decisionmakers in terms of their ability to design and enact policies in a way that is truly adaptive. Further research is also needed to understand how current institutional structures and processes add or detract from this capacity.

4) **Find entry points within the UNFCCC (United Nations Framework Convention on Climate Change) reporting mechanisms to anchor climate security-sensitive responses and mainstream climate-conflict/climate-peace considerations:** as our analysis suggests that some of the key milestones for substantial engagement with climate change and ways to mitigate and adapt to its effects come in the form of documents related to the UNFCCC reporting mechanisms, it is recommended that this multilateral infrastructure is also utilised to promote a more cohesive mainstreaming of climate-conflict and climate-peace considerations. Related to recommendation 1, ensuring that policy- and decision-makers are equipped for mitigating and managing climate-related security risks will require the construction of an easily accessible evidence base in which lessons learned from different contexts are communicated across the relevant stakeholder networks. Furthermore, given the often cross-border and cross-scalar nature of both the problem and the design of potential solutions to climate-related security risks, the creation and maintenance of such networks is essential.

The UNFCCC mechanism has created an effective framework through which coordination between countries on climate change-related issues has improved, enshrining a unified reporting structure and aiding accountability in implementation. The utility of this global infrastructure should also therefore be maximised for the purposes of mainstreaming climate-conflict and climate-peace considerations for instance by mandating countries to include climate security-related considerations into National Adaptation Plans (NAPs) and Nationally Determined Contributions

(NDCs). Regional organisations such as ECOWAS and CILSS should as part of such efforts be actively engaged with and treated as incubating entities through which climate security-specific evidence, technical capacities, and convening power can be distributed.

Bibliography

allAfrica. (2022). *The Emerging Senegal Plan (ESP)*. https://allafrica.com/infocenter/PSE_2015/

Baden, C., Kligler-Vilenchik, N., & Yarchi, M. (2020). Hybrid Content Analysis: Toward a Strategy for the Theory-driven, Computer-assisted Classification of Large Text Corpora. *Communication Methods and Measures*, *14*(3), 165–183.

Bofin, P. M., du Preez, A., Standing, A., & Williams, A. (2011). *Addressing governance and corruption challenges in schemes for Reducing Emissions from Deforestation and Forest Degradation (REDD)*.

Borras, S. M., Hall, R., Scoones, I., White, B., & Wolford, W. (2011). Towards a better understanding of global land grabbing: an editorial introduction. *Journal of Peasant Studies*, *38*(2), 209–216. https://doi.org/10.1080/03066150.2011.559005

Carlisle, K., & Gruby, R. L. (2019). Polycentric Systems of Governance: A Theoretical Model for the Commons. *Policy Studies Journal*, *47*(4), 927–952. https://doi.org/10.1111/psj.12212

Church, C., & Crawford, A. (2018). *Green Conflict Minerals: The Fuels of Conflict in the Transition to a Low-carbon Economy*.

CIAT, & BFS/USAID. (2016). *Climate-smart agriculture in Senegal*. https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA_Profile_Zambia.pdf

CILSS. (2021). *Mandate of CILSS*. Https://Www.Cilss.Int/.

COMRECC. (2019). *COMRECC Presentation*. https://comnacc.sn/comrecc-senegal/

Conway, G. (2021, November 12). *On peace, security, and finance at COP26*. UNDP Blog.

Dabelko, G., Herzer, L., Null, S., Parker, M., & Sticklor, R. (2013). *The Conflict Potential of Climate Change Adaptation and Mitigation*.

Detges, A., Klingenfeld, D., König, C., Pohl, B., Rüttinger, L., Schewe, J., Sedova, B., & Vivekananda, J. (2020). *10 Insights on Climate Impacts and Peace*.

Doelman, J. C., Stehfest, E., Vuuren, D. P., Tabeau, A., Hof, A. F., Braakhekke, M. C., Gernaat, D. E. H. J., Berg, M., Zeist, W., Daioglou, V., Meijl, H., & Lucas, P. L. (2020). Afforestation for climate change mitigation: Potentials, risks and trade-offs. *Global Change Biology*, *26*(3), 1576–1591. https://doi.org/10.1111/gcb.14887

Economist Intelligence Unit. (2022). *Democracy Index 2021: The China Challenge*.

ECOWAS. (2022a). *Agriculture and Environment*. https://www.ecowas.int/ecowas-sectors/agriculture/

ECOWAS. (2022b). *Political Affairs*. https://www.ecowas.int/ecowas-sectors/political-

affairs/

Eljarh, M. (2016). *Security Challenges and Issues in the Sahelo-Saharan Region: the Senegal Perspective*.

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative Content Analysis: A Focus on Trustworthiness. *SAGE*, *4*(1), 1–10. https://doi.org/10.1177/2158244014522633

Feitelson, E., & Tubi, A. (2017). A main driver or an intermediate variable? Climate change, water and security in the Middle East. *Global Environmental Change*, *44*, 39–48. https://doi.org/10.1016/j.gloenvcha.2017.03.001

General Peace Agreement Between the Government of the Republic of Senegal and Le Mouvement des Forces Démocratiques de la Casamance (MFDC), 1 (2004).

Gueye, D., & Deshingkar, P. (2020). *Irregular Migration in Senegal Faith, Dreams and Human Smuggling through the Desert and Sea*. Migrating out of Poverty. www.migratingoutofpoverty.org

Holsti, O. (1969). *Content Analysis for the Social Sciences and Humanities*. Addison-Wesley Publishers.

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Institute for Economics and Peace. (2022). *Global Peace Index 2022: Measuring Peace in a Complex World*.

Islam, N., & Winkel, J. (2017). *Climate Change and Social Inequality*.

Konrad-Adenaur-Stiftung. (2021). *North of the countries of the Gulf of Guinea: the New Frontier for Jihadist Groups?*

Krampe, F. (2019). *Climate change, peacebuilding and sustaining peace*.

Läderach, P., Ramirez-Villegas, J., Prager, S. D., Osorio, D., Krendelsberger, A., Zougmoré, R. B., Charbonneau, B., van Dijk, H., Madurga-Lopez, I., & Pacillo, G. (2021). The importance of food systems in a climate crisis for peace and security in the Sahel. *International Review of the Red Cross*, *103*(918), 995–1028. https://doi.org/10.1017/S1816383122000170

Lake Chad Basin Crisis. (2021).

Langsdorf, S., Löschke, S., Möller, V., & Okem, A. (2022). *Climate Change 2022 Impacts, Adaptation and Vulnerability Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. www.ipcc.ch

Lave, J., & Wenger, E. (1991). *Situated Learning*. Cambridge University Press. https://doi.org/10.1017/CBO9780511815355

Madurga-Lopez, I. (2021). The Forgotten Conflict of Senegal. *Instituto Español de Estudios* , *1*(100), 1–13.

Maisonnave, H., & Maboundou, P. (2020). *Agricultural economic reforms, gender inequalities and poverty in Senegal*.

Matthew, R., & Hammill, A. (2013). Peacebuilding and Adaptation to Climate Change. In *Assessing and Restoring Natural Resources in Post-conflict Peacebuilding*. Routledge.

Ministère de l'Environnement et du Développement Durable. (2015). *Troisième Communication Nationale du Senegal - A la Convention Cadre Des Nations-Unies Sur Les Changements Climatique*.

Ministry of Water and Sanitation. (2022). *Directorate of Flood Prevention and Management* . https://eau-assainissement.gouv.sn/ova_dep/direction-de-la-prevention-et-de-la-gestion-des-inondations/

Nachmany, M., Fankhauser, S., Davidová, J., Kingsmill, N., Landesman, T., Roppongi, H., Schleifer, P., Setzer, J., Sharman, A., Singleton, C. S., Sundaresan, J., & Singleton, T. T. S. (2015). *CLIMATE CHANGE LEGISLATION IN SENEGAL The 2015 Global Climate Legislation Study A Review of Climate Change Legislation in 99 Countries*. www.lse.ac.uk/GranthamInstitute/legislation/

National Agency for Civil Aviation and Meteorology of Senegal (ANACIM), WFP's Office for Climate Change, Environment and Disaster Risk Reduction, WFP's Food Security Analysis Service, Columbia University's International Research Institute for Climate and Society, & WFP Country Office in Senegal. (2013). *Climate risk and food security in Senegal: Analysis of climate impacts on food security and livelihoods*. https://www.uncclearn.org/sites/default/files/inventory/wfp10.pdf%0Afile:///Users/rosalind/Dropbox/1 Mac/Papers2/Reports/2013/Krishna/2013 Krishna.pdf%0Apapers2://publication/uuid/73063268-DDCE-4005-8D6F-39748D08DA40

Ouédraogo, É. (2021). *National Security Strategy Development: Senegal Case Study*.

Pahl-Wostl, C. (2009). A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Global Environmental Change*, *19*(3), 354–365. https://doi.org/10.1016/j.gloenvcha.2009.06.001

PartnersGlobal. (2019). *White Paper for Sustainable Peace in Casamance: Perspectives from Women and Local Populations*.

Partnership on Transparency in the Paris Agreement. (2018). *Building Local Scientific Capacities for the NAP Process in Senegal*.

Partnership on Transparency in the Paris Agreement. (2019). *Harmonising and Managing Inter-sectorality: The Elaboration of "Environment and Sustainable Development Sectoral Strategies" (SEDDS) in Senegal*.

Patel, T., Dhiaulhaq, A., Gritten, D., Yasmi, Y., De Bruyn, T., Paudel, N. S., Luintel, H., Khatri, D. B., Silori, C., & Suzuki, R. (2013). Predicting future conflict under REDD+ implementation. *Forests*, *4*(2), 343–363. https://doi.org/10.3390/f4020343

Polit, D. F., & Beck, C. T. (2012). *Nursing research: Principles and methods*. Lippincott Williams & Wilkins.

Pujol-Mazzini, A. (2018, July 3). Islamist terrorist groups are turning their attention to West Africa. *The Washington Post*.

Sanchez, A. J. (2018). *Peace Committees for Conflict Resolution in Casamance: From Popular Illusion to Political Denial* (No. 13).

Savelli, A., Schapendonk, F., Sarzana, C., Gupta, T., Caroli, G., Duffy, M., de Brauw, A., Thornton, P., Pacillo, G., & Laderach, P. (2022). *The Climate-Security-Mobility Nexus: Impact Pathways and Research Priorities*.

Scartozzi, C. M. (2021). Reframing Climate-Induced Socio-Environmental Conflicts: A Systematic Review. *International Studies Review*, *23*(3), 696–725.

Scartozzi, C. M. (2022a). Climate-Sensitive Programming in International Security: An Analysis of UN Peacekeeping Operations and Special Political Missions. *International Peacekeeping*, *29*(3), 488–521. https://doi.org/https://doi.org/10.1080/13533312.2022.2084387

Scartozzi, C. M. (2022b). Climate Change in the UN Security Council: An Analysis of Discourses and Organizational Trends. *International Studies Perspectives*. https://doi.org/https://doi.org/10.1093/isp/ekac003

Schaer, C., Thiam, M. D., & Nygaard, I. (2018). Flood management in urban Senegal: an actor-oriented perspective on national and transnational adaptation interventions. *Climate and Development*, *10*(3), 243–258. https://doi.org/10.1080/17565529.2017.1291405

Schultes, I. (2022). *Western Africa's recent coups highlight the risk of trading development for security, the rule of law, and rights*.

Shuttleworth, S. (2017). Editorial annex: Key findings and recommendations from the HERCULES research project, and the need for a landscape approach to environmental governance . *Landscape Research*, *42*(8), 1–12.

Spicer, E. A., Swaffield, S., & Moore, K. (2020). A landscape and landscape biography approach to assessing the consequences of an environmental policy implementation. *Landscape Research*, *45*(4), 444–457. https://doi.org/10.1080/01426397.2019.1669147

Stemler, S. (2000). An overview of content analysis. *Practical Assessment, Research and Evaluation*, *7*(17), 2000–2001. https://doi.org/10.1362/146934703771910080

Tänzler, D., Carius, A., & Maas, A. (2013). *The Need for Conflict-Sensitive Adaptation* .

Tänzler, D., & Scherer, N. (2018). *Guidelines for Conflict-sensitive Adaptation to Climate Change*.

UCLG and OECD. (2016). *Senegal: Unitary Country*.

World Bank. (2004). *TECHNICAL ANNEX TO THE MEMORANDUM AND RECOMMENDATION OF THE PRESIDENT TO THE EXECUTIVE DIRECTORS ON A PROPOSED CREDIT OF SDR 13.8 MILLION (US$20 MILLION EQUIVALENT) TO THE REPUBLIC OF SENEGAL FOR A CASAMANCE EMERGENCY RECONSTRUCTION SUPPORT PROJECT*.