Climate change and resilience in the Central Sahel

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Key messages

- The Central Sahel region is expected to face important climatic changes in the next decades which will affect food security, livelihoods, mobility and security. Temperatures, particularly in the northern parts of the Central Sahel, could rise 1,5 times faster than the global average by 2030. Climatic shocks and extreme events such as droughts and heavy rains could become more frequent and severe; and rainfall variability in time and space could increase.
- Extreme weather events can disrupt agricultural and pastoral production in the Central Sahel and harm vulnerable rural communities. Adaptation to climate change requires an integrated approach, which capitalises on the complementarity between agriculture and pastoralism, and promotes small-scale adaptation initiatives.
- The Central Sahel is experiencing forced displacement due to violent conflict as well as climatic shocks, including extreme weather events taking place now. Mobility is an essential mechanism to diversify sources of income, including in response to challenging economic and adverse climatic conditions. Current approaches to migration and mobility must appreciate the importance of human mobility. Existing protocols on free movement should be implemented and growing evidence on the importance of internal and external border flexibility must be harnessed.
- Communal violence in the Central Sahel is on the rise. Dispute resolution mechanisms, including with regards to natural resources, have come under increased pressure due to climatic shocks, in combination with historical grievances, exclusion and social inequalities. Security and peacebuilding strategies must be recalibrated, with increased attention for governance and human security and a shift from heavily militarised to development oriented approaches.

Introduction

This policy paper summarises the main findings from research conducted under CASCADES on the Central Sahel, covering Burkina Faso, Mali and Niger.[1] This research focused on key climate related challenges in the region, notably with regards to livelihoods, food security, human mobility and human security, including communal conflicts and violent extremism.[2] The main conclusion is that climate change is and will be an important factor for the future of the Central Sahel. Both its current and future impacts, however, are intrinsically linked to socio-economic and political factors that must be emphasised when addressing climate-related challenges in the region.

This policy paper is structured as follows. We first present a brief overview of expected climate impacts on the region, and their possible knock-on effects on livelihoods and food security, mobility, communal violence and violent extremism. We then go on to discuss some of the current policy responses and the challenges related to these issues; and summarise policy recommendations to address shortcomings in current approaches to climate risks in the Sahel. In closing, we look forward to how climate change impacts could unfold in the region.

Climate impacts in the Central Sahel

Projected temperatures increases and increased rainfall variability

According to the IPCC (2019), the Sahel is already among the regions in the world most strongly affected by climate change. Climate projections for the future are not conclusive and differ depending on different climate models. However, there is agreement that climate change will cause temperatures rising 1.5 times faster than the global average, according to ISIMIP data.[3] Climate projections also generally predict more frequent and severe climatic shocks and extreme weather events such as droughts and floods. Finally,

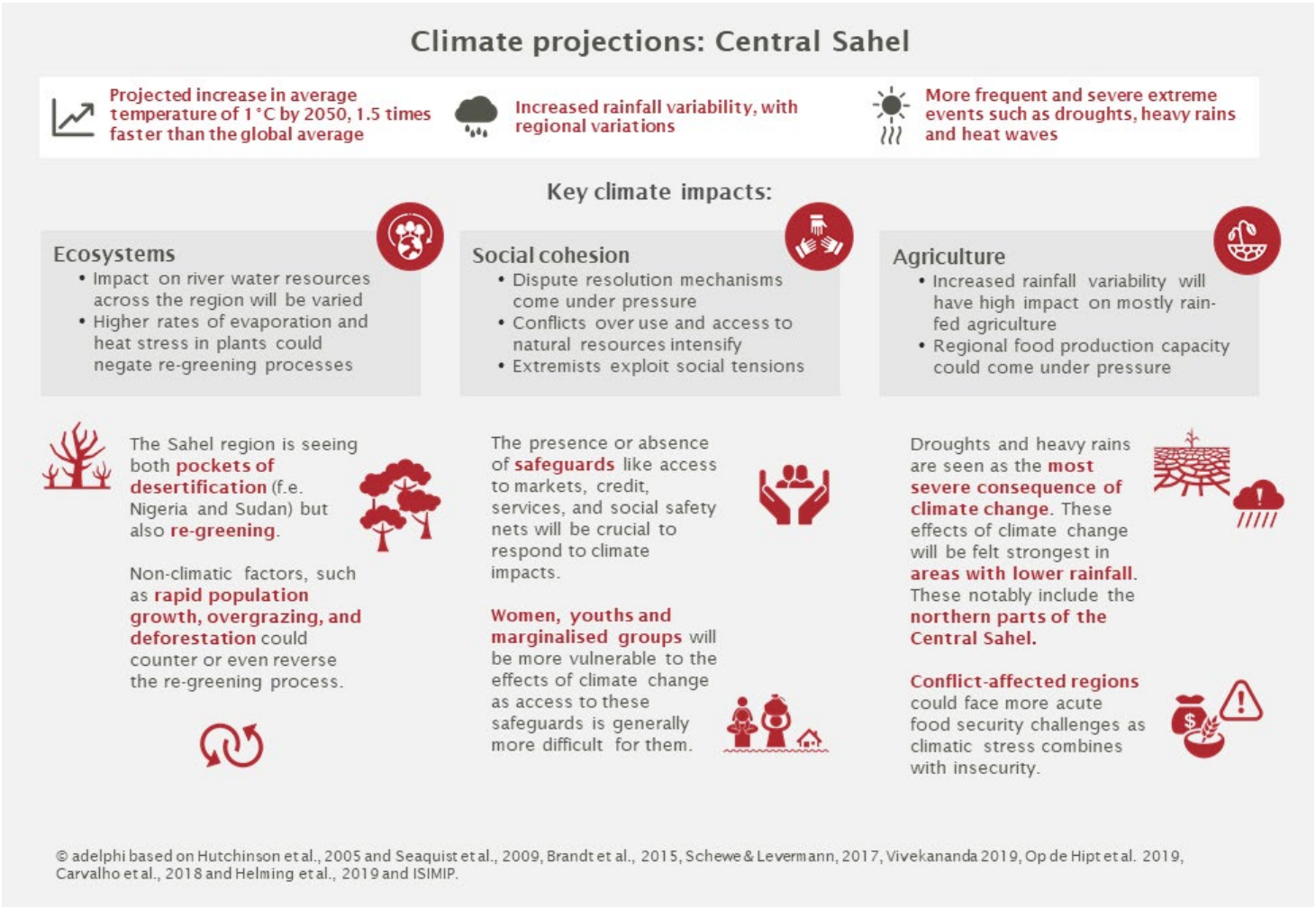
[1] The research is based on an extensive study based on an online survey of over 200 experts, semi-structured interviews, an analysis of historical data on climate change, food security and conflict, and a foresight exercise based on scenario building. For more information about the survey, see the raw data published by Bourekba & Puig (2020).

[2] See Puig, O., Desmidt, S., Detges, A., Tondel, F. and Van Ackern, P., Foong A., Volkholz, J. (2021), Climate Change, Development and Security in the Central Sahel. CASCADES, June 2021.

[3] ISIMIP is a community-based climate impact modelling initiative aimed at contributing to a quantitative and cross-sectoral synthesis of the incremental impacts of climate change, including associated uncertainties. The main objective of ISIMIP is to contribute to the global (cross-sectoral) understanding of the impacts of policy and scientifically relevant climate change scenarios. For more information: https://www.isimip.org/.

rainfall variability is also expected to increase, with important regional differences. The figure 1 below shows the main climate change impacts currently already taking place, which could be further aggravated by climate change impacts such as increased temperatures, rainfall variability and increased occurrence of extreme weather events.

Figure 1. Projected climate impacts for the Central Sahel



Possible impacts on food security, mobility and human security

Livelihoods and food security

The impact of climate change in the region is expected to severely affect livelihoods dependent on rain-fed agriculture and pastoralism, due to increased frequency and severity of extreme weather effects, increased rainfall variability and rising temperatures. Together with mixed agro-pastoralism, experts estimate these to be most affected, followed by other sectors such as (informal) trade and fishing (Puig et al., 2021). Negative impacts, such as reduced crop yields, are likely to be more pronounced in areas with limited irrigation capacity and weak flood management infrastructures. Farming communities with poor access to agricultural inputs (seeds and fertilizers) and services of limited knowledge (both on climate-resilient techniques and traditional knowledge) will be more heavily affected. In particular, women, for whom access to land and credit is generally more difficult, will likely be in a more vulnerable situation than men (Görman & Chauzal, 2019).

In relation to food security, rural areas will also be among the most affected by climate change, as the availability of food in these places is highly dependent on local production. Continued poor roads and storage infrastructure would further limit access to distant markets. Urban areas, which generally enjoy better access to global food markets, could also suffer from speculation on international food markets and volatile international food prices. Concerns about the impact of climate change on food security featured prominently in our survey of experts (see footnote 1; and Puig et al., 2021).

Mobility

Climate change impacts could affect mobility patterns in the Sahel, from transhumance and rural-urban migration to cross border circular migration. Rainfall variability could affect changes in access to water and forage. Together with the expansion of agricultural lands and current conflicts, this could lead to unpredictable deviations in herd movements and lead to tensions around transhumance protocols, corridors and calendars (De Haan et al., 2016; Brottem & McDonnell, 2020). Mobility, however, is an important way to diversify household incomes and cope with difficult conditions, at least for those who can afford to be mobile. In general, men are more mobile than women, with some exceptions, for example in Kantché in Niger, with primarily female circular mobility towards Algeria (see Puig et al., 2021). Overall, experts expect irregular mobility to increase in the region as a result of adverse climate change impacts through increased communal tensions, soil degradation, loss of livelihoods and economic opportunities. Experts also expect most migrants to stay within Africa, in particular in the Sahel itself and countries of the Gulf of Guinea , with a much smaller share of migration towards Europe, Asia or even the Americas (Puig et al., 2021).

Human security

Most studies find complex and indirect links between climate change and conflict, intertwined with socio-economic, political and historical factors (Gleditsch, 2012; Kloos et al., 2013). Climate-induced losses of livelihoods or food insecurity could exacerbate situations of violence and the proliferation of violent extremism. For example, by creating opportunities for armed groups to more easily recruit destitute farmers and pastoralists in search of food, money or protection (Ba & Cold, 2021). These impacts expose the general failure of public authorities to protect communities from the adverse effects of climate change, further contributing to grievances (Ba & Cold, 2021). In fact, experts surveyed for our research overwhelmingly hold foreign military interventions

responsible for the increase in violence, far ahead of climate change effects (see Puig et al 2021).

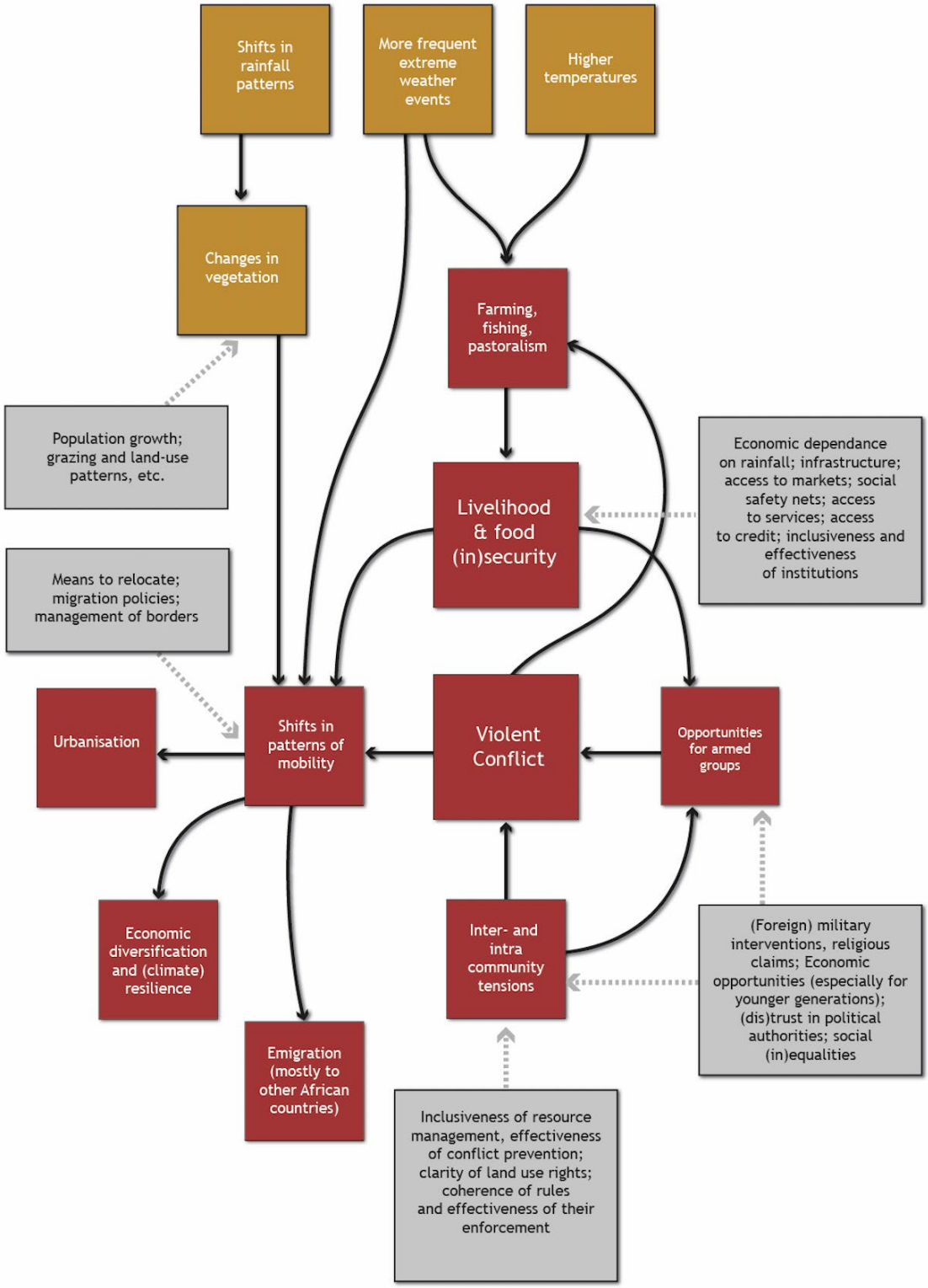
Results from the quantitative analysis conducted during our research show an indirect, rather than a direct link between extreme weather events and the frequency of violent events in the region (Puig et al., 2021). For example, droughts and floods seem to increase the risk of conflict by disrupting rural livelihoods and food security. These effects are even more pronounced in areas with poor infrastructure and low economic activity. The results thus suggest that armed violence is highly dependent on contextual socio-economic or political factors, confirming previous research (Brown, 2019; Nagarajan, 2020).

The evolution of climate impacts: contextual factors

How these impacts will unfold, will depend to a great extent on contextual factors, such as the provision of social safety or the evolution of conflict resolution mechanisms. These contextual factors are highlighted in the grey boxes in figure 2, see below. They will determine future vulnerability and resilience in the region and hence the likelihood of seeing the cascading impacts materialise in the future.

For example, the likelihood of seeing increased poverty or food insecurity as a consequence of more frequent extreme weather events will depend on the dependence of rural households on rainfed agriculture and other climate-sensitive livelihoods. Similarly, formal and informal systems of resource management and conflict prevention will play a decisive role in whether climate-induced poverty or food insecurity will aggravate conflicts further down the line. Likewise, social safety nets and access to services (such as health and education) are essential in order to cope with adverse climate change and seek out more climate-resilient livelihoods. This is especially important for women and minority groups, who are often not only more vulnerable to climatic shocks but also less likely to benefit from such services. Access to social services and inclusive institutions will also more generally influence state-citizen relations, trust in public authorities, and ultimately opportunities for armed groups to win over those who have lost their livelihoods to droughts and other extreme events (Puig et al., 2021; see also Van Ackern & Detges forthcoming for a discussion of possible future scenarios).

Figure 2. Possible future climate impacts and key contextual factors



Current policy responses and recommendations

Despite efforts by national, regional and international actors to improve the resilience of the region's populations, there is much room for improvement. This section will discuss the current policy responses with regards to livelihoods and food security, mobility and migration and human security.

Promoting resilient livelihoods and food security

Improving the resilience of the region's agricultural systems

The region's irrigation potential is untapped. For example, in Burkina Faso, only 0.5% of the total national cropland is irrigated - representing only 27% of the potentially irrigable land area. While investments in recent decades have prioritised large-scale, costlier and less profitable irrigation techniques, priorities seem to be shifting, with recent studies highlighting the environmental and economic benefits of investing in small-scale irrigation systems. This includes increasing options for investments in small motor pumps, but also drip irrigation as a viable and feasible technique to promote higher profitability and lower environmental impact (Partey et al., 2018).

Dryland farming techniques could form a viable complement to investments in irrigation. This includes soil conservation and restoration, through fallow rotation mechanisms, use of less aggressive tillage techniques, and prioritisation of mulch or cover crops (Zougmoré et al., 2019). These techniques have shown benefits with regards to the yield, soil improvement and crop diversification and involve use of local and traditional techniques. Despite the high labour costs, overall positive economic effects on the production chain are expected from these techniques, as well as a positive effect on greenhouse gas emissions, soil conservation and water harvesting (Schuler et al., 2016). Other approaches, such as climate-smart agriculture (CSA) have also been promoted across the region (Knaepen et al., 2015) while some shortcomings have been noted to promoted CSA more widely (see box 1)

Driven by research carried out by regional research centres such as Agrhymet and the Sahel Institute, there have been notable advances with regard to the use of drought-resistant seeds. Our research however notes a lack of ownership of this knowledge by local farmers. This points to the need for more support and funding to disseminate this knowledge, but also to improve access to drought resistant seeds. Experts and interviewees also call for a valorisation of less water-intensive crops. While products such as rice have been promoted across the region (including by international actors), the crop is not always adapted to the biophysical environment of certain regions despite its nutritional benefits (Puig et al., 2021).

Improved infrastructure for transport, storage, processing and energy supply are also needed, especially in light of the considerable investment gaps in this domain. Improved access to meteorological information, including by the regions' centres of expertise such as Agrhyment, will be needed.. The expected increases in rainfall variability as a result of climate change will require better information on the distribution, intensity, and frequency of extreme events that may affect crops. Early warning systems should ideally combine modern technology, as well as local knowledge and observations (Puig et al., 2021). Efforts to further develop intra-regional trade and regional agri-food markets are also needed. Given the reliance on imports of internationally traded staple food commodities to satisfy regional consumption needs (Tondel and Ouédraogo, 2018). Continued monitoring of international market risks should also be a critical component of Sahelian countries' food security strategies, especially in light of the potential volatility in world markets as a result of climate-related global price shocks.

In Box 1 below we summarise some ongoing initiatives and approaches as well as some of their shortcomings with regards to improving livelihood security in the Sahel. These include the Great Green Wall Initiative (GGWI) and Climate-Smart Agriculture (CSA) approaches.

Box 1. Ongoing flagship projects and approaches

The Great Green Wall Initiative

Led by the African Union (AU), the Great Green Wall Initiative (GGWI) is Africa's flagship initiative to combat desertification, with plans to replant thousands of trees on a 15 km-wide strip that spans 7,000 km across the Sahel belt, from Senegal to Djibouti. Despite commitments made by the Sahelian governments, and their international partners, progress has been limited. According to estimates, only 15% of the implementations have been realised, mainly in Senegal. Reasons include a persistent lack of funding, implementation difficulties, and conflicts in several participating countries. In addition, the GGW relies heavily on a desertification narrative, which needs to be revisited to also include other climate change effects such as re-greening.

Experts have called upon policy makers to consider the possibility of a climate change-induced greening of the Sahel in the context of the GGW and thereby adapt some of the GGW's measures to this scenario to local realities. National public administrations in Burkina Faso, Mali and Niger have taken ownership and aligned the initiative with national strategies and policies, adapting the objectives to country specific context. But there is a need to increase the participation of other actors, notably civil society.

In relation to the intention to preserve natural resources, such as forests, experts have called to cease heavy handed approaches to environmental protection. For example, the Forest Services in Mali have been repeatedly accused of extortion and abuses against vulnerable rural communities. Their poor reputation challenges the effectiveness of vegetation rehabilitation initiatives, while intensifying vulnerabilities and potentially contributing to increased conflict (Nagarajan, 2020; Raineri, 2020).

Climate-smart agriculture (CSA) approaches

Climate-smart agriculture is a model promoted by the FAO and other international actors, which seeks to introduce an integrated set of tools and policies to value both indigenous and modern farming technologies. Regional and national initiatives to promote CSA initiatives have been taken including in West Africa (Knaepen et al., 2015) It

aims to provide a framework for sustainable and equitable agricultural and livestock productivity, by promoting climate change adaptation and mitigation measures.

CSA approaches are currently being implemented only in some specific areas of the three countries analysed (Zougmoré et al., 2019). Results from our research suggest that CSA could be an effective model to achieve sustainable agricultural and livestock development. The main challenge is to improve the appropriation of modern techniques, such as improved and climate-resilient seeds, among local communities. Moreover, by focusing on sedentary livestock rearing in practice, it risks relegating pastoralism to a secondary form of livestock rearing (Puig et al., 2021).

Improving the resilience of pastoralist systems

The experts surveyed for our research ranked increasing funding for pastoralist communities relatively high among their priorities. The most salient option that emerged from our survey was the consistent application of regional and national protocols regarding transhumance corridors. This implies identifying and adjusting the current transhumance routes: i.e., updating and adjusting the vocation of land, mapping livestock corridors, and defining entry and exit calendars that are flexible enough to accommodate unexpected changes in weather conditions.

This is the core of the Nouakchott Declaration, adopted by six Sahelian countries (Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal) in 2013, and which include commitments to improve production services; improve the competitiveness of the livestock sector and market access for pastoralists; strengthen the security of assets, rights and lifestyles of pastoralists; improve access to basic services, and promote political inclusion (Puig et al., 2021). In particular, there is a need to improve early warning and information service and to make these available to pastoralist communities. Various regional and national projects are aiming to support this, but greater efforts are needed, including by promoting greater literacy among pastoralist communities on useful meteorological indicators.

These measures need to be accompanied by efforts to address structural inequalities between and within communities in relations to land use and ownership, access to water, as well as access to legal protection (Boas, 2019; Bisson et al., 2021). Interviewees for example noted that conflicts between farmers and pastoralists tend to be resolved in favour of farmers. This is because farmers are often better represented politically, have a better knowledge of legal processes and also often have greater influence over local authorities (Puig et al., 2021, Bisson et al., 2021).

Box 2. Summary of policy recommendations on livelihoods and food security

- Capitalise on the complementarity between agriculture and pastoralism and promote more locally-led small-scale adaptation initiatives: The priority should be to increase soil productivity, including through the pursuit of small-scale irrigation methods. In addition, the use of drought-resistant seeds should be promoted, which our research shows faces a lack of support for the dissemination of (and knowledge on) resistant seeds among farmers, despite great investments in research in recent years.
- Translate political commitments made to the promotion of pastoralist livelihoods into concrete actions: Transhumance corridors must be better defined and rigorously enforced while still allowing for flexible adjustment to future climatic impacts and addressing the historical exclusion of pastoralist communities. It is also necessary to improve information and early warning systems and facilitate the dissemination of climate information to pastoralist communities.
- Existing mitigation and adaptation initiatives and approaches such as the Great Green Wall (GGW) and Climate-Smart Agriculture (CSA) need to be better adapted to local needs: The GGW should be open to other possible effects of climate change beyond desertification, and should rethink the approach towards certain actors involved in environmental protection. Local ownership of CSA, a potential interesting model to improve adaptation to climate change should be improved.

Enabling mobility as a livelihood strategy

For many communities across the Central Sahel, mobility has been an essential strategy to adapt to difficult climatic conditions and diversify livelihoods. However, restrictive migration policies promoted by the EU and Sahelian countries in the region hinder rather than support effective adaptation to climate change in the region (Gemenne & Blocher, 2017; Zanker et al., 2020).

According to experts, restrictive migration policies in the Sahel contribute to more clandestine migration, increasing the risk for human rights violations (Andersson, 2016; Molenaar, 2017; Raineri et al., 2019; Brachet, 2018; Puig, 2020). In addition, these policies put pressure on local economies and affect social cohesion (Idrissa, 2019). They also risk reinforcing nationalist sentiment and tensions between groups from different countries (Snorek et al., 2014). As a result, thousands of people are stranded in cities such as Agadez, Niamey or Bamako, putting strains on local administrations and services while dampening sentiment in host communities and among migrants (Okunade & Ogunnubi, 2018). In this context, EU funds dedicated to control migration perpetuate and increase predatory and clientelistic structures and policies (Brachet, 2018; Boas, 2020). Finally, EU migration policies are inconsistent with EU goals in other policy domains, such as their support to projects on free movement such as Free Movement of People and Migration in West Africa (FMM) and the related Migration Dialogue for West Africa (MIDWA) (Puig et al., 2021). The EU funds these initiatives and, at the same time, undermines them because of bilateral agreements between the EU and countries like Niger to contain migration.

Rural-urban migration will remain a challenge in the region. It will require continued efforts to improve basic services in rural and urban areas, especially health and education, with a focus on reducing inequalities including between urban and rural areas. Efforts are needed to create conditions for a dignified life in rural areas, by acknowledging the economic and social links that mobility makes possible between rural and urban areas, especially through remittances. There is also a need to improve urban planning in light of strong urban growth, and to avoid confinement or rural migrations in peripheral urban areas.

At a regional level, measures should respect and implement national and regional protocols regarding transhumance and free movement across borders (UNOWAS, 2018). This includes support for regional approaches rather than bilateral agreements between Sahelian governments and the EU, which risk exacerbating nationalisation of transhumance and aggravating xenophobic sentiments (Puig et al., 2021).

Box 3. Summary of policy recommendations on mobility and migration

- **Relax migration control measures and promote mobility as a coping strategy:** As a counter to a restrictive migration narrative, mobility should be increasingly understood as a way of life and as a strategy to adapt and diversify income and livelihoods. The implementation of existing protocols on free movement should be supported, including by the EU. Bilateral agreements aimed at migration containment should be avoided, as this weakens regional approaches promoted by ECOWAS.
- **Increase policy coherence with regards to foreign policy, migration and resilience to climate change:** The growing evidence on the importance of greater internal and external border flexibility must be used more to refute xenophobic and racist discourses in Europe that legitimise counterproductive containment strategies in the Sahel. This could generate greater coherence between efforts to promote human rights, free movement but also the EU's growing efforts to climate adaptation in the region.

Redefining peacebuilding and security strategies

According to our research, better access to, and more equal distribution of natural resources are seen as critical elements to curb different forms of violent conflicts in the region. National, regional and international actors are currently involved in a range of initiatives that address peace- and security-related challenges, in line with natural resource management, national reconciliation and decentralisation processes. At the regional level, policies have been adopted to address insecurity as well as a range of security and military operations launched by regional and international actors. The African Union (AU) has also recognised and discussed climate-related security risks. For example, it adopted the Bamako Declaration on Access to Natural Resources and Conflicts between Communities in November 2019. But while the AU is seen as aiming to improve collaboration and coordination in this field, experts have noted a lack of tangible policy operationalisation, financial unpreparedness, and limited member state accountability as constraints to the AU's climate--security work (Aminga & Krampe, 2020).

The findings of our study note considerable challenges to the implementation of current policies and laws as they do not address structural marginalisation and grievances, particularly among pastoralist communities (Bisson et al., 2021), which have been exploited by armed groups (Ba & Cold, 2021) and have fuelled discontent with the status-quo (ICG, 2017). On the other hand, although decentralisation processes have been underway for several decades and have been supported by international actors, they have failed to improve local governance and participation, due to weak institutional capacity, elite capture and political conflict (Bisson, 2020).

Experts are highly critical of international actors' priorities, including the EU (Pérez & Puig, 2019; Schmauder et al., 2020). In practice, the majority of EU funds are geared towards migration control and counterterrorism (Boas, 2020). Governance issues are addressed in parallel, predominantly via technical assistance, but not in concert with other European interventions in the region (Schmauder et al., 2020). Thus, they are not informed by systematic political or conflict analysis, and without sufficiently taking into account potential political consequences (Goxho, 2021).

In order to avoid grievances, gaps between national laws and customary practices on land use should be addressed. Pastoralist communities should be more closely involved in political decision-making processes, both at the national and local levels. This should include a validation of local and traditional conflict resolution mechanisms, but avoid legal ambiguity that leaves room for abuse, rent-seeking, and marginalisation of disadvantaged groups.

In this context, it will be crucial to promote a politically sensitive approach to development and security in the region and link it to ongoing decentralisation and reform processes. In areas where conflicts over resources are currently taking place, strategies and aid programmes should be implemented in a conflict-sensitive manner, buttressed by efforts to strengthen inter-communal trust, and social cohesion.

For the EU, but also other international actors, this calls for a recalibration of its strategies in the region towards more coherence among trade, development, security, migration, and climate change adaptation policies. While the EU has increased its climate change objectives in the region, this has not been accompanied by the necessary funding nor a conflict-sensitive approach. More generally, overly militarised approaches to conflict should be avoided. These have shown to be counterproductive and to weaken social cohesion and trust in political authorities. Instead, policies should put human

security more central in their conflict prevention approaches (Pérouse de Montclos, 2021). This means moving towards considering a wider range of relevant factors (e.g. climate variability, environmental degradation, secure livelihoods) and solutions (e.g. education and governance).

Ultimately, this will imply prioritising human rights as well as the principles of effectiveness and accountability applicable to both local and international actors. The new European Integrated Strategy for the Sahel (EU 2021) offers an opportunity to rethink what has been done so far, and to commit to new scenarios that minimise the area's vulnerabilities from a socio-economic, political and climatic point of view.

Box 4. Summary of policy recommendations with regards to human security

- **Redefine peacebuilding and security strategies:** Attention to governance - informed by a more politically and conflict-sensitive approach, should be promoted. This will require a greater validation of local conflict resolution and natural resource management mechanisms and approaches, while avoiding legal pluralism that allows for exclusion of certain groups. Decentralisation processes in the three countries are crucial to take into account and support, while considering some of their shortcomings

- **Recalibrate peacebuilding and security strategies in the region towards sustainable development**. This would include a move away from restrictive migration control and militarised security, towards development, trade and sustainable development. The objectives and strategies of different actors need to be harmonised, with inclusion of local civil society in particular. Military activities deployed in the region must also be improved, based on a human rights approach and a better understanding of climate risks.

Looking forward: addressing key vulnerabilities and promoting factors of resilience

Given the challenges but also opportunities outlined above, we suggested a range of policy improvements with regards to livelihoods, mobility and human security in the preceding chapter. How climate change impacts will unfold in the region will not just depend on projected climatic impacts such as rising temperatures or increased rainfall variability. Future climate impacts on livelihoods, food security, mobility and conflicts in the Central Sahel will also depend on the evolution of the region's socio-economic and political conditions (i.e. contextual factors) that determine its vulnerability or resilience.

The table below gives an overview of which contextual factors are important to consider to assess the region's susceptibility to experience climate-related security and development challenges. For example, the risk of increasing communal violence in connection with climatic pressures will partly depend on which efforts are made to invest in the effectiveness of conflict resolution mechanisms or clarifying land use rights. Likewise, measures to reduce economic dependence on rainfall will limit the impact of climate change on rural production and livelihoods.

Table 1. Climate change impact and contextual factors

Possible effect of climate change	Contextual factors influencing the likelihood and/or intensity of this effect
Climate-induced production shortfalls, loss of livelihoods and food insecurity	■ Economic dependence on rainfall ■ Ability to maintain agricultural productivity ■ Infrastructures (roads, irrigation, flood management) ■ Access to markets (food, livestock, agricultural inputs) ■ Management of borders ■ Social safety nets and access to services ■ Inclusive and effective institutions
Mobility as a coping and economic diversification strategy	■ Means to travel and relocate ■ Social networks ■ (Knowledge of) economic opportunities elsewhere ■ Migration policies and management of borders ■ Urban planning ■ Attitudes towards migrants among host communities ■ Inclusive and effective institutions
Increased risk of inter- and intra-communal conflicts	■ Inclusiveness of institutions ■ Effectiveness of the enforcement of rules ■ Effectiveness of conflict resolution ■ Coherence of resource governance ■ Clarity of land use rights

Increased proliferation of armed opposition groups	■ Increased proliferation of armed opposition groups ■ Economic opportunities, especially for younger generations ■ Inclusiveness and effectiveness of institutions ■ Trust in political authorities ■ Social (in)equalities

Future policy choices with regards to these contextual factors mean that a number of opportunities exist to reduce future risks and increase resilience in the Central Sahel. For example, the EU and other international and regional actors could support regional resilience to the effects of climate change on displacements, food insecurity, and violent conflict by supporting reforms that strengthen local institutions and participatory mechanisms for natural resource management and conflict prevention. Similarly, Governments, donors, and civil society could choose to continue to support large-scale, centralised irrigation systems, or support more decentralised local-level measures as well.

Depending on these policy choices, we can envision different scenarios unfolding in the region, characterised by different levels of vulnerability or resilience to the climate impacts described in previous sections. As part of our research, three possible future scenarios were developed together with regional experts. These will be discussed in more detail in a separate upcoming paper (see also Van Ackern & Detges forthcoming). Clearly, the future of the region is not set in stone, and exploring the range of policy issues outlined in this paper will help make it more secure and sustainable.

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