

RESEARCH REPORT

Climate Change and Conflict in the RUZIZI Plain (DRC)

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1 | Introduction

A fragility approach

This report is based on a case study on the links between climate change and conflict dynamics in the Ruzizi Plain, South Kivu, eastern Congo. The study has been conducted as part of the interdisciplinary KLIMSEC project.¹ Within this broader project, the aim of the case study is to provide contextual, empirical knowledge on climate and security, by focusing on the way local communities experience a complex interlinkage between climate change-related environmental distress and conflict dynamics in the Ruzizi Plain located in South Kivu Province in the Democratic Republic of Congo (DRC) – a region which has for decades been affected by varying degrees of instability and insecurity.

The rationale behind this case study is to bring a socio-anthropological perspective to the discussion on the linkages between climate change, conflict and human security. This question has been the subject of debate for some time, and cross-case research indicates that direct causal links between climate change and propensity for conflict are not clear-cut.² There is, however, a consensus on the idea of climate change as a double-edged risk multiplier: on the one hand, the effects of climate change further fragilize communities already affected by conflict, while on the other hand armed conflicts can exacerbate impacts of climate change in various ways.

The current study foregrounds perspectives of people in communities affected by both conflict and climate crisis in the Ruzizi Plain, considers historical evolutions, and investigates the role of customary authorities. By doing so, it follows an earlier output of the KLIMSEC project, which argued for a “fragility approach” to better grasp and act upon the complexities of the climate change-conflict

¹ <https://ees.kuleuven.be/eng/klimsec/>

² This body of literature will not be further discussed in this paper. For a more elaborate discussion, see Vervisch, T. (2020) Climate Security – A Fragility Lens. KLIMSEC POLICY BRIEF – 26/02/2021.

nexus.³ Such an approach is more holistic and considers political, security, economic, social and environmental dimensions of fragility. It places climate security risks in a broader historical, socio-economic and political context. The emphasis on the importance of local political governance systems and processes in dealing with climate stress is important and implies that dealing with climate security problems will have to move beyond technical fixes.⁴ While the role of governance in climate security is recognized, many analyses on the relationship between climate change and conflict continue to have a blind spot for the role of power and institutions.⁵

The Ruzizi Plain case study presented here has tried to make use of such a more fine-grained, contextual perspective, by taking two principles of the fragility approach as a starting point: the need for historicized, contextually embedded analysis and, therein, the centring of political governance as a key factor in understanding environmental and socio-political fragility. The latter will be done by considering the role of customary authorities in the Ruzizi Plain.

Methodology

Field research was carried out in different phases between April and December 2021 by researchers from the Groupe d'Etudes sur les Conflits et la Sécurité Humaine (GEC-SH) and the Angaza Institute (Conflict Analysis and Governance Research Centre), both based in Bukavu. In total, over 80 interviews and informal conversations have been conducted, with interlocutors from different categories, as well as focus groups. After an exploratory phase, research focused on seven locations within the Ruzizi Plain: Luvungi, Katogota, Luberizi, Bwegera, Kiliba, Sange and Uvira.

The exploratory phase results pointed to biophysical impacts of climate change and to conflict-related dynamics that deserved more in-depth field research. At the same time, field researchers have sought to corroborate

³ Id.

⁴ Id., for a more elaborate discussion of this argument, see Nightingale, A. et al. (2020).

⁵ Mosello, B. et al. (2020), p. 6.

interview findings with meteorological data, for instance from the Kiliba station. This has proven to be a very difficult task, which highlights one of the key challenges to be addressed in terms of climate change-related research and policy-making in South Kivu and in the region: the lack of easily accessible and publicly available data on long and short-term climate evolutions.

The Ruzizi Plain

The geographical focus of this case study is on the Congolese part of the Ruzizi River Plain, located in South Kivu. The latter extends from the upstream reaches of the Ruzizi River, south of Lake Kivu, to the river's delta near the city of Uvira on the shores of Lake Tanganyika. It is the border area where the DRC, Burundi and Rwanda meet.

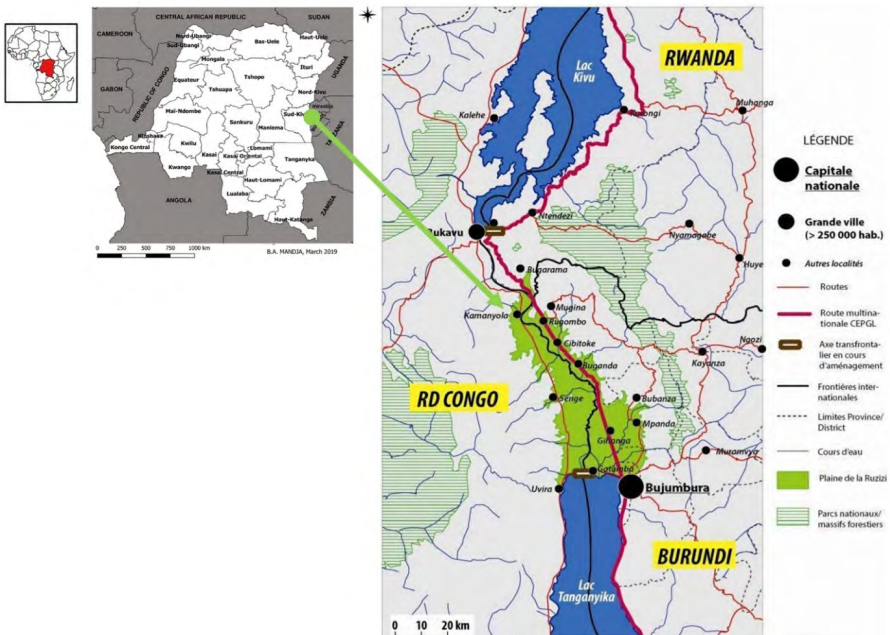


Fig 1. Location of the Ruzizi Plain (source: created from CEPGL 2015)

The rationale for focusing on the Ruzizi Plain is that this area can be considered a typical case for interactions between climate change and conflict. For decades, the region has been marked by violent conflict in varying degrees and intensity and in some cases linked to climate change, as is the case with, for example, conflicts between pastoralists and farmers during the transhumance season.⁶ Also, in recent years, the livelihoods of communities in the plain have been affected by capricious weather patterns and natural disasters which can be linked to climatic disruptions. These phenomena are at the heart of people's everyday concerns in the Ruzizi Plain. Flooding, drought, loss of crops and pasture, as well as insecurity due to armed violence, were making headlines in the local press throughout the research period and continue to do so.

Conflict in the Ruzizi Plain

A QUASI PERMANENT CONFLICTUALITY

The conflictuality of the Ruzizi Plain is complex and multilevel.⁷ In most cases, conflicts are becoming violent. On a first, broad level, there are longstanding tensions between the two main groups in the plain: the Barundi, a minority group who throughout the 19th century immigrated in various waves onto the plain from the neighbouring Burundi kingdom, and the Bafuliru, whose clans consider themselves autochthonous to the region.⁸ Over the years, power struggles between the two communities over the customary authority of the Ruzizi Plain chiefdom sparked several episodes of intense violent conflict and high-level assassination plots, incited by local politicians and local leaders involving youth groups, self-defence militias and armed groups. The stakes of this conflict go beyond the question of autochthony or who should be ruling over the area, and includes the protection of elite interests, mainly

⁶ Vervisch, et al. (2020) MONUSCO's mandate and the climate security nexus, Policy brief, GIC, Ghent University; Brabant, J. & Kambale, N. (2013), *La houe, la vache et le fusil. Conflits liés à la transhumance en territoire de Fizi et d'Uvira : état des lieux et leçons tirées de l'expérience de LPI*, Life & Peace Institute, Uppsala.

⁷ For a more in-depth discussion on various types of conflict in the Ruzizi Plain and their drivers, see: Verweijen, J. et al. (2020). *The Ruzizi Plain: A Crossroads of Conflict and Violence*. Insecure Livelihoods Series. Governance in Conflict Network, Ghent.

⁸ Id. pp. 10-11.

land holdings.⁹ As a result of this violence, in several villages of the plain, parallel customary power structures are present, each one representing one community. As Verweijen et al. have observed,¹⁰ and as has been confirmed by our conversations with local stakeholders, this strongly complicates local conflict resolution mechanisms. As a result of recent outbursts of violence there was a tit-for-tat dynamic of armed mobilization, whereby both communities started bolstering self-defence recruitment.

Secondly, there are conflicts within both communities over leadership. These conflicts also have an important effect on the position of local customary authorities and their abilities in dealing with challenges related to environmental changes and distress, as will be further discussed.

Finally, the tension between farmers and herders constitutes a source of social conflict in the plain which is particularly relevant to the question of how climate change interacts with conflict dynamics. Agro-pastoral conflicts are mainly sparked by cattle moving through agricultural land, and in the process destroying crops. This recurring tension over transhumance (seasonally practised mobility of livestock in search of grazing lands) is longstanding in the region, and has been increasingly associated with violent crime, such as the looting, killing, or kidnapping of cattle.¹¹ However, as will be discussed further in this report, drought and changes in the biophysical environment linked to climate change have further complicated these existing tensions in recent years.

A FRAGMENTED SECURITY LANDSCAPE

Not all conflict dynamics and socio-political fault-lines discussed above are per se violent. However, the current security landscape of the Ruzizi Plain is characterized by a fragmentation of armed actors, including alliances between national and foreign armed groups. This armed fragmentation is a result of regional, national, and local security dynamics.

⁹ Id., p. 24.

¹⁰ Id., p. 25

¹¹ Id.

Some of these actors, such as the Mai-Mai groups and local self-defence units, are supported by and claim to defend the interests of various communities in the Ruzizi Plain. However, since the mid-1990s, the plain has been affected by regional dynamics of civil wars and conflict in the aftermath of the Rwandan genocide and the Burundian civil war. Even today the Ruzizi Plain continues to be affected by regional conflict dynamics, mainly due to the presence of Burundian armed groups which emerged out of electoral crises in in Burundi in 2010 (FNL-Nzabampema) and in 2015 (RED-Tabara). Initially, these armed groups used the territory as a base from which to set up operations against Burundian targets. However, these groups have become increasingly embedded in the local landscape of armed actors, forming alliances with local groups.

Thus, for more than a decade, Burundian armed groups have been present in the Ruzizi Plain. Their stronghold was situated around the Kiliba zone – close to the border and home to a sugar plantation – and around the Moyens and Hauts Plateaux of Uvira, including Mwenga territory.¹² United Nations expert group reports are clear on their role in the deteriorating security situation.¹³ The presence of these Burundian rebel groups draws in other armed actors who oppose them, such as the Burundian national defence forces or groups affiliated with the Burundian ruling party's Imbonerakure youth league. This further complicates the security dynamics in the area.

The existence of these armed actors contributes to various sources of socio-political conflict. While the intercommunal violence in the Ruzizi Plain in the 2010s drew a lot of attention, stakeholders involved in other forms of conflict also make use of these armed actors. This is also the case for conflicts which revolve around competition over scarce resources.

¹² Sector 6 and the forests of Rukoko have been impacted by Burundian FNL rebel movements under the leadership of Aloys Nzabampema. In 2015, Burundian rebels from both FOREBU and the new rebellion RED-Tabara – which in the region is commonly assumed to be backed by Kigali – were active in the territories adjacent to the Ruzizi Plain: Uvira and Fizi, but also used the plain as a passage.

¹³ See United Nations, Security Council (2016): Final Report of the UN Group of Experts on the DR Congo, S/2016/466; United Nations, Security Council (2017): Final Report of the UN Group of Experts on the DR Congo, S/2017/672; United Nations, Security Council (2018): Final Report of the UN Group of Experts on the DR Congo, S/2018/113.

2 | Environmental degradation and the aftermath of war

In line with recent discussions on environmental impact of war and violent conflict, it is important to consider how earlier episodes of regional insecurity have drastically transformed the physical environment in and around the Ruzizi Plain.¹⁴ In this case, we are less concerned with the effect of warfare on the landscape itself and more with how the legacies of regional violent conflict – specifically, the management of refugee crises – has affected the Ruzizi Plain. This problem is not unique to this case. Acute environmental degradation in countries hosting huge refugee streams is increasingly acknowledged,¹⁵ and the UNHCR is aware that not enough has been done to minimize the environmental impact of its worldwide humanitarian operations.¹⁶ The case of the Ruzizi Plain helps to impart an understanding of the long-term effects of such massive humanitarian operations on host landscapes.

Since the early 1990s, the Ruzizi Plain has become a prime zone of refuge for large numbers of Rwandans and Burundians fleeing civil war. These refugee movements, or rather the way they were managed, fundamentally transformed the physical landscape of parts of the Ruzizi Plain and the Uvira territory. First, they have been at the basis of a massive deforestation in the Ruzizi Plain. Wood in the plain has always been exploited for construction materials (including brickmaking) and the production of charcoal. However, an important turning point was observed between 1993 and 1996, when tens

¹⁴ For an overview, see Weir, D. (2020): How does war damage the environment? Conflict and Environment Observatory, <https://ceobs.org/how-does-war-damage-the-environment/>

¹⁵ Hammer, L. and Ahmed, S. (2021) Refugee camps can wreak enormous environmental damages – should source countries be liable for them? The Conversation, <https://theconversation.com/refugee-camps-can-wreak-enormous-environmental-damages-should-source-countries-be-liable-for-them-152519>.

¹⁶ Harper, A. (2016) A critical time for refugees and their environment (again), <https://www.unhcr.org/innovation/critical-time-refugees-environment/>.

of thousands of Burundian and Rwandan civilians took refuge in the eastern DRC and the Ruzizi Plain in particular. In Lubarika, for example, more than 900 ha, formerly the domain of the *Industrie des Produits Agricoles du Kivu* (IPAK), were systematically deforested. Local sources recall how the felled trees were sold to the UNHCR, to be used as firewood for refugee families. The exploitation of wood quickly became an economic opportunity for both local operators and refugees deprived of any other means of subsistence. After dismantling the refugee camps in September 1996, the felling of trees for profit was perpetuated by inhabitants of the Ruzizi Plain. However, the effects of this “humanitarian deforestation” cannot be underestimated, especially when we consider how they continue to interact with the biophysical impacts of climate change today.

Secondly, from a spatial planning perspective, the years of war and successive waves of refugees have contributed to changing the social, economic, and political configuration of the rural communities of the Ruzizi Plain. The refugee movements in the aftermath of regional violence were not only fuelled deforestation but were also a driving factor for the development of “rural suburbs” on the Ruzizi Plain. These rural suburbs connected to the peripheral districts of Uvira in the DRC, Cibitoke in Burundi, and Bugarama in Rwanda. In turn, the process of urbanization of this border area has contributed on the one hand to further deforestation and on the other hand to a significant reduction of arable land, thus creating additional pressure on land use practices.

In this sense, we also have to understand how the contemporary environmental fragility of the Ruzizi Plain landscape has been shaped by the humanitarian management of earlier episodes of regional insecurity. Consequently, it is essential to factor in the longer term repercussions of warfare when examining the interconnections between climate change and conflict.¹⁷ In the next section, we will look at the main biophysical effects of climate change in the Ruzizi Plain as they are experienced and perceived by local communities.

¹⁷ For a further discussion on the long-term harm from often less spectacular environmental impacts of warfare and violent conflict see: Nixon, Rob (2013) *Slow Violence and the Environmentalism of the Poor*. Harvard University Press.

3 | Climate change in the Ruzizi Plain

Biophysical impacts of climate change

Located between latitudes 3°20' and 4°20' and longitudes 29° and 29°30', the Ruzizi Plain has a dry savannah climate, enduring a well-defined six to seven-month dry season. Annual rainfall had long varied, ranging from 800-900 mm/year in the lower plain to 1200-1300 mm/year on the valley slopes.¹⁸ April has traditionally been the wettest month. The average annual temperature is 24°C with a maximum of 30°C (September-November) and a minimum of 18°C (July). Except for the Ruzizi River itself, whose source is Lake Kivu, the Mitumba Mountains, which overlook the Ruzizi Plain, are considered the main watershed catchment, where the rivers in this region have their sources: the Luberizi, the Sange, the Runingu, the Kiliba and the Kawizi. The Ruzizi River links Lake Kivu and Lake Tanganyika, meandering approximately 100 km. In Uvira, three torrential rivers flow directly into Lake Tanganyika: the Kavimvira, the Mulongwe and the Kalimabenge.

Once lush and dotted with waterholes, the Ruzizi plain in many places has gradually lost much of its vegetation cover since the second half of the 1990s. While this degradation was initially attributed to the fallout from the Rwandan and Burundian conflicts in eastern DRC, particularly the deforestation linked to the arrival of regional refugees who occupied the area from 1993 onwards, it is understood by our interlocutors that climate change is further contributing to this phenomenon. Other recently observable trends also point to climate change: the first relates to rainfall disturbances in the area (as confirmed by testimonies in Luvungi, Kiliba, and Sange), while the second relates to the increasingly 'unpredictable' rise in the level of Lake Tanganyika (per Uvira testimonies). Furthermore, the sandy soils, coupled with steep valley slopes and intense rains, contribute to high rates of erosion,

¹⁸ Ministry of Foreign Affairs of the Netherlands, 2018.

constituting a primary factor in the elevated soil degradation. The area's susceptibility to floods is heightened by the presence of rivers and its location between mountain ranges.¹⁹

As climate change advances, the Ruzizi Plain is expected to experience several biophysical alterations. According to a Climate Change Profile for the Ruzizi Plain,²⁰ these include a rise in temperature, heightened intensity of rainfall during heavy rain events, and an escalation in the frequency and intensity of floods and erosion in lowlands. Furthermore, an increased occurrence of droughts, prolonged dry seasons (extending from May through September) characterized by elevated temperature and aridity, and a reduction in the duration of rainy seasons are anticipated. According to the same profile, salinization in the Ruzizi Plain and an annual augmentation of drylands are also among the projected consequences.²¹

As our interviews made clear, many of these predicted biophysical impacts are already part of everyday reality for communities in the plain. The main reported manifestations of climatic changes in the area are ever longer dry seasons, the changing or disappearance of vegetation cover, reduced grazing lands, a decline in water availability, and increased flooding due to excessive and irregular rainfall and rising levels of Lake Tanganyika.

Irregular rainfall, drought and food insecurity

Its geoclimatic setting, described above, made the Ruzizi Plain one of the main areas of agricultural production in both the Kivu region and the Great Lakes subregion, and, under colonial rule, several large agricultural companies were set-up, producing, rice, cotton and sugar. While the sector has been in decline and most companies went bankrupt, contemporary changes in climate and the environment strongly affect their potential revival. Indeed, today the region is experiencing ever-increasing drought, and local farmers confirm that climate change impacts their activities.

¹⁹ Id.

²⁰ Id.

²¹ Id.

While it has been challenging to obtain long-term reliable data, the irregularity and lack of rainfall is pointed out by interlocutors as the first important manifestation of climate change. It's a serious cause for distress among subsistence farmers, whose capacity to produce food is heavily disrupted. On this subject, a resident of Luvungi said:

The rains are currently scarce in our area. The drought has affected timing of the agricultural activities. For example, after the harvest of season B (August), there was a drought until today. This means that by now people should normally be consuming maize and beans (for the upcoming Christmas and New Year). But because of the lack of rain, there is a shortage of basic foodstuffs.²²

There is a tendency for the dry season to be prolonged. This leaves farmers in a bind, as stated by a block leader of COPAILU (a cooperative operating in Luberizi):

Normally, the rainy season starts in September. Moreover, this year many farmers have decided not to grow rice because last year they were disappointed ... Now that they have had the first rains, they have plunged into growing cassava, maize and groundnuts, abandoning the irrigated areas. Unfortunately, all these crops have been hit by drought.²³

The impact on agricultural activities, as well as the tensions caused by reduced grazing lands, will be more extensively discussed in the next section.

Flooding caused by rain and the rising waters of Lake Tanganyika

In addition to the slow onset climate change impacts which affect food production and increase tensions over resources, as the following section will discuss more extensively, there are also important sudden onset climate change impacts, in the form of floods, which drastically affect the Ruzizi Plain and contribute to the vulnerability of its communities.

²² Interview with an environmental activist, Luvungi, 18 December 2021.

²³ Interview, block leader of COPAILU, Luberizi, December 2021.

Uvira is squeezed between Lake Tanganyika to the east and the Mitumba Mountains to the west. From this mountain range 14 rivers flow, including six permanent rivers and eight torrential rivers. For half a decade, the populations of Uvira and the Ruzizi River Plain have been helplessly watching floods from rivers and Lake Tanganyika invade their land. This has affected tens of thousands of people, with considerable loss of life and property destruction.

The gradual rise in the waters of Lake Tanganyika in the last couple of years has been one of the most mediatized natural phenomena affecting the Ruzizi Plain. In 2020, this rise was accentuated by torrential rains, leading to disastrous consequences which are still fresh in the memories of the people interviewed for this study. Humanitarian workers and government services counted more than 10,000 houses partially or totally destroyed.²⁴ A year later, in January 2021, the people living along Lake Tanganyika's shores were again affected by its rising waters. This caused some families to move away, abandoning their plots either because of invading waters, or because of hippopotamus populations expanding their territories. And in April 2021, catastrophe struck again: the commune of Kavimvira lost about a kilometre of its original shoreline. During the same spell, the border post with Burundi was totally engulfed.

While the waters have somewhat receded, the situation on the lakeshores is not stable and there has been considerable loss of life and damage to infrastructure and livelihoods.²⁵ Unfortunately, these sudden onset biophysical impacts of a changing climate seem to become recurrent features of life on the plain. Analyses focusing on climate change in the Great Lakes Region point to the surface temperature of the Indian Ocean as the main driver of heavier rainfall in East Africa.²⁶ This affects Lake Tanganyika and of course its entire basin between Tanzania, Burundi and eastern DRC. In a technical note addressed to the DRC political and administrative authorities, Professor Masilya Mulungula notes that flooding is not a new phenomenon in Uvira,

²⁴ Mihigo, R.P. (2020) Rapport d'évaluation des conséquences humanitaires des fortes pluies qui se sont abattues sur le ville et le territoire d'Uvira les nuits du 17 au 20 avril 2020, PACIF Asbl.

²⁵ Boko, Hermann (2021) "RD Congo : une nouvelle montée des eaux du lac Tanganyika menace la ville d'Uvira dans le Sud-Kivu". Les Observateurs - France 24, 28 avril.

²⁶ Taithe (2014), "Le changement climatique dans la région des Grands Lacs". Les Cahiers d'Afrique de l'Est, no. 48 (1 avril 2014): 37-50.

but what has changed is the intensity.²⁷ There are clear indications that since 2018, levels have reached unprecedented heights, two meters above median levels.²⁸ This has obvious consequences for the reorganization of space both in the vicinity of the lake itself (e.g. Makobola) and in the Ruzizi Plain further north. It has resulted in a significantly reduced amount of cultivable land on the lakeshore, which drives farmers to look elsewhere for fertile land. This testimony from the president of the local organization UMOJA clearly indicates that these climate change impacts lead to ad hoc adaptation practices, whereby farmers search for cultivable lands in neighbouring areas with higher elevation:

We have noticed a big negative change at all levels; the abundant rains, the water levels of the lake have increased (decrease of cultivable spaces at the edge of the lake), the women are starting to go and look for fields on the mountains.

Indeed, more farmers are exploiting the mountain slopes for their agricultural activities. We have observed that seemingly inappropriate farming practices on these slopes contribute further to erosion and land degradation, which is clearly visible on many of the hills overlooking localities such as Katogota village.

As argued elsewhere, climate change is in itself not the sole factor contributing to increased stresses on livelihoods and habitation caused by floods around Lake Tanganyika, and structural issues such as population density and urbanization patterns should also be considered when explaining the increased vulnerability observed today, as compared to historic episodes of flooding.²⁹ Still, with the prospects of this phenomenon persisting, there is an urgent need to support riverine populations in the plain to adapt in a

²⁷ La Prunelle, 2020, "Inondations à Uvira : le prof Masilya donne les raisons et propose des pistes de solution". La PrunelleRDC (blog), 28 avril 2020. <https://laprunellerdc.info/inondations-a-uvira-le-prof-masilya-donne-les-raisons-et-propose-des-pistes-de-solution/>; Masilya, P. (2021) Les inondations à Uvira : Note technique à l'intention de l'autorité provinciale, Bukavu, Sud Kivu.

²⁸ Worldwater (2021) Water surface elevation timeseries reveals the rising water levels in Lake Tanganyika, <https://worldwater.earth/water-surface-elevation-timeseries-reveals-the-rising-water-levels-in-lake-tanganyika/>.

²⁹ Gooding, Philip (2023) "Historic Lake Level Variability and Current Disasters on the Shores of Lake Tanganyika", Environment & Society Portal, Arcadia, no. 22. Rachel Carson Center for Environment and Society. doi: 10.5282/rcc/9745.

more structural and coordinated way to this situation and provide solutions for their housing and livelihoods. Such solutions will also have to be sensitive to the livelihood challenges faced by populations living in localities with a higher elevation, in order not to further aggravate existing tensions over land and pasture, as will be described in the next section.

Difficulties in obtaining concrete information about climate change effects in the area

From interlocutors' testimonies, the daily effects of a changing climate are tangible in many aspects of people's lives and livelihoods. However, we found that it is difficult to obtain up to date, reliable and freely accessible data on these effects. There is for instance a serious lack of up-to-date rainfall data for the Ruzizi Plain. This makes it difficult for any scientific approach to closely monitor the evolution of climate change.

It is not the first time that the area has been subjected to rainfall disturbances. Local customary authorities refer to historic periods of drought. For example, during 1974 and 1975, the Itara-Luvungi grouping experienced an extended dry season. This sudden, brief and unusual disruption of climatic conditions was quickly read through the lens of custom. The administrative secretary of the Itara-Luvungi *groupement* said:

In case of exaggerated drought, the kings had rites to make it rain. Moreover, kings from other regions came to ask for rain here in Luvungi. And also, each time we had a king who was not completely customary, this often had repercussions on the rainfall or on people's health.

While such magico-religious explanations of climate change might not hold water, they are very much rooted in the consciousness of the people of the Ruzizi Plain. This is easy to understand in a context where the weather services are no longer functional. Indeed, all the rain gauge stations that were once operational between Kamanyola and Kiliba, passing through Luvungi and Sange, no longer exist. While media every now and then link catastrophes, drought and failed harvests to climate change, there is little publicly available monitoring and a lack of communication on rising temperatures and rainfall patterns, factors which hugely impact the livelihoods of local communities.

Being able to provide adequate public knowledge about climate change effects is important. Obviously, this kind of information is crucial for actors and agencies involved in development planning, disaster prevention and the accompaniment of local peasant communities and livestock herders. However, being able to access information about local variation in various climatic parameters, and being able to explain how these changes relate to a degrading environment and affect livelihood practices, as well as how they relate to global climate change dynamics, is also important in terms of social cohesion and the legitimacy of local governance structures. As we will discuss below, the explanation for climate change is itself a source of tension and affects the role and position of some customary authority structures.



Rising waters of Lake Tanganyika and flooding of the road at Makobola (photo: Patient Polepole)

4 | Climate change and the tensions surrounding transhumance and water

Transhumance and conflicts between farmers and herders

When we want to understand the relationship between climate change and resource conflict in the Ruzizi Plain, it is important to analyse the phenomenon of bovine transhumance and the broader tensions surrounding livestock farming.

Historically, transhumance in this part of the Uvira territory has been known as a seasonal movement of cattle from the middle and high plateaus: between April and August they are driven down to the Ruzizi Plain's green grass and water. Tens of thousands of bovines pour into the Uvira lowlands, a movement which if left uncontrolled can be highly disruptive to agricultural practices in the plain. Our fieldwork findings highlight new developments due to climate change regarding transhumance.

Firstly, interviewed stakeholders claim that over the last 15 years, the duration of the stay of these herds in the lowlands has extended from three to four months to four to five months. While transhumance itself is a permanent source of conflict between herders and the farmers whose fields are affected,³⁰ the longer stays of incoming herds contribute to the exacerbation of conflicts and in some cases violence.

³⁰ Brabant, J. & Kambale, N., (2013): La houe, la vache et le fusil. Conflits liés à la transhumance en territoire de Fizi et d'Uvira : état des lieux et leçons tirées de l'expérience de LPI, Life & Peace Institute, Uppsala.

Secondly, it is no longer possible to explain conflicts linked to transhumance from the sole prism of identity, given the existence of two forms of transhumance: “vertical” transhumance and “horizontal” transhumance. Vertical transhumance is the movement of cattle from the “moyen” (middle) plateaus to the “bas” (low) plateaus. This often concerns Banyamulenge herders, leading to an identity-related dimension of ensuing conflicts. Horizontal transhumance is the movement of herds from certain lowland villages to other lowland villages that are less affected by the effects of climate change and provide better grazing opportunities. This is the case, for instance, of cows that leave the villages of Bwegera and Luberizi to go to Luvungi. These herds belong to herders from the lowlands who are either Bafuliiru, Bavira, Barundi or national and subregional elites. This is a new form of transhumance and shows how the effects of climate change are spreading throughout the region, including the lowlands, whereby villages are not affected in the same way.

Both these types of transhumance have reconfigured conflicts over access to grazing areas and water. Horizontal transhumance in particular leads to a change in the narrative on the identity-based dimension of conflicts in the Ruzizi Plain. Whereas the identity issue was at the centre of the conflict in the context of vertical transhumance, the new developments in this arena deconstruct this narrative. Conflicts related to transhumance have typically occurred between herders and farmers. The herders in question are now no longer a fixed or homogeneous category. Research has shown that there are now civilian herders (Bavira, Bafuliru, Banyamulenge), military herders (national army officers, armed group leaders) and foreign herders (mainly from Rwanda and Burundi). Conflicts are now more commonly understood as a result of competition between actors for access to natural resources, namely water and pasture. Thus the effects of climate change make it possible to problematize established analyses of conflicts in the Ruzizi Plain, which tended to foreground two main stakes: identity and competition for power, with identity being considered the major element around which other problems revolve.³¹ With climate change impacts becoming more serious

³¹ See for example Brabant and Kambale (2013), ICG (2013), Muchukiwa (2013), Verweijen et al. (2020).

and the increased competition for access to resources (grazing and water) now involving a broader set of actors, identity becomes less dominant in the understanding of transhumance-related conflicts.

Fourthly, the scarcity of pasture and the meagre harvests due to climatic disturbances no longer allow the farmer-herder conflict management mechanisms established by non-governmental organizations, such as the Life & Peace Institute, Action pour le Développement et la Paix Endogène (ADEPAE) and Réseau d'Innovation Organisationnelle (RIO), to play their long-term role. So-called Njia ya Ngombe – bypass trails to prevent crop destruction – no longer seem to serve their purpose: herds overrun them, enter farmers' fields, graze and destroy the crops. Consequently, farmers rustle cattle as compensation for destroyed crops. Key informants and members of local conflict management structures report being overwhelmed by the number and intensity of conflicts referred to them. The nature of the actors involved in these conflicts (military, powerful elites and armed groups) is seen as a real obstacle to conflict mediation efforts and initiatives.

Climate change, vulnerability and actor strategies

Climate change's biophysical impacts contribute to vulnerability in the Ruzizi Plain for both herders and farmers. Unlike in the past, pastoralists in search of pasture fall into three categories: transhumant herders from the Moyens and Hauts Plateaux; formerly sedentary herders from the Bas Plateaux; and herders from Rwanda and Burundi. The first category is that of the Banyamulenge who are used to annual vertical transhumance and who, even if their arrival caused conflicts, managed to access sufficient grazing areas to feed their herds. The second category includes small-scale local herders, local elites who own large concessions and are often relocated to Uvira, Bukavu and Kinshasa, military officers who own cattle, and sometimes armed group leaders. The diversity of this category makes it a difficult group to manage. Violent incidents have even become commonplace, as this testimony shows:

Some cow owners are at the same time military leaders, local authorities or powerful elites. This penalizes the peasant farmers when tensions arise; they are powerless against the rich herders. Recently, a peasant farmer was flogged to death by a military officer who was a herder because he told him that his cows had passed and destroyed his field. He spent several weeks in hospital.³²

The third category results from the phenomenon of “cattle without borders”. Herders from neighbouring countries have increasingly crossed the border to seek grazing areas in eastern DRC. Public policies in both Burundi and Rwanda act as a catalyst for this phenomenon. Due to a lack of space, and in order to promote more productive cattle-breeding practices, in both countries policies of sedentarization (“*stabulation*”) have been initiated.³³ As a consequence, the Ruzizi Plain has become a much sought-after destination for thousands of bovines from Burundi and Rwanda. Although this phenomenon can be observed at any time of year, it is more pronounced during the dry season (between May and August). The porosity of the borders now accentuates the insecurity of local herders who, in addition to being competitors for pasture access, are victims of cattle theft, and they do not exclude that the thieves come from Burundi.

Importantly, this shows that the effects of climate change in South Kivu cannot be addressed in isolation from subregional issues. While the arrival of Rwandan and Burundian refugees in the 1990s accelerated the deforestation of the Ruzizi Plain, public agricultural policies of these two countries, coupled with climate change, have led to the ‘dumping’ of thousands of cows into the Ruzizi Plain, thus complicating existing conflict dynamics.

The appearance of ‘new herders’ searching for pasture in the transhumance landscape exacerbates both competition between herders and conflict between herders and farmers. A customary chief testified to the difficulties this entails:

³² Interview with a political-administrative authority, Katogota, December 2021.

³³ In Burundi, a law was adopted in 2018 to promote permanent stabulation (<https://www.iwacu-burundi.org/le-senat-adopte-un-projet-de-loi-pour-la-stabulation-des-animaux/>). The law, which provided a three-year transition period, has been applied since October 2021, and has provoked much anger and contestation among cattle owners in Burundi (see <https://www.iwacu-burundi.org/stabulation-permanente-une-loi-decreee-par-les-eleveurs/>).

With the scarcity of pastures, transhumant herders from Bwegera and Luberizi target the pasture of Kanganiro in Luvungi. Their presence is at the root of conflicts with those of Luvungi, especially since the Kanganiro pasture cannot meet the need for livestock. The Kanganiro Kraal was already small compared to the herders of the 'terroir' and they were already competing for space in this Kraal. This was exacerbated by the massive influx of cows from Burundi. To deal with these conflicts, we decided to enlarge their Kraal by granting them four hectares of surplus.³⁴

The multiplicity of herders competing for grazing land has led to the development of numerous acts of sabotage such as cattle theft, cattle mutilation and rustling.³⁵ While in the past these tactics were attributed to farmers as revenge for the destruction of their fields and crops, the reality has become more complex. Indeed, these acts are perpetrated by either undisciplined elements of the government army, by armed groups (who steal directly or are complicit in the theft), local bandits, herders (local or foreign) and farmers (who use theft as a resistance strategy against the effects of transhumance and the destruction of their crops):

Nowadays, cow theft has become the business of several actors. To say that it is the farmers who steal them is an exaggeration. The military and armed groups are involved. Even farmers stealing cows from other farmers is happening here. This situation has become very complicated.³⁶

In addition to exacerbating local conflicts and increasing competition for pasture, the arrival of foreign cows is a source of uncertainty for local herders, because new breeds can carry diseases and risk decimating their own cows. As one breeder said:

There have been cows from Burundi that have crossed here as a result of the ban on breeding wild breeds on the other side (Burundi). The breeding of these cows is not allowed here in DRC and those who do it, do it fraudulently. But also, for us breeders, we are afraid that there is an introduction of new breeds because they can transmit Bulenge (a cow disease from which the new breeds sometimes suffer) to our cows. This disease is very dangerous because it can ravage a whole herd in one day.³⁷

³⁴ Interview with a customary chief, Itara/Luvungi, November 2021.

³⁵ An example of the scale of such violent incidents around transhumance in the Uvira Plain is the raid, during the time of research, on a cattle herd of a Burundian owner in Bwegera, in which over 100 cows were taken, a dozen cows were injured and the herder killed by an unidentified armed group. <https://www.iwacu-burundi.org/un-berger-tue-et-120-vaches-en-transhumance-a-lest-de-la-rdc-volees-par-des-rebelles/>.

³⁶ Interview with a customary chief, Itara/Luvungi, November 2021.

³⁷ Interview with a breeder, Bwegera, August 2021.

Access to land and water as a source of conflict in the Uvira Plain

WATER CONFLICTS

Our findings also show that competition over access to natural resources is no longer limited to pasture for grazing. It now also concerns access to water: access for farmers to irrigate their fields and crops, and access for herders to water their herds. This competition is not only a source of conflict between farmers and between farmers and herders, but also reinforces the vulnerability of both groups. The vulnerability of herders is based on the scarcity of sufficient space to feed their livestock, access to water, and the theft of their cows. This vulnerability adds nuance to a dominant perception livestock keepers as relatively more powerful actors. Indeed, the effects of climate change and the challenges it poses are having an increasingly negative impact on the livestock sector in the Ruzizi Plain.

However, it can be argued that the vulnerability of farmers is even more pronounced and occurs at three levels. Firstly, the scarcity of rainfall, which implies a long period of drought, significantly complicates the agricultural calendar, leading to meagre harvests and the abandonment of certain crops. A female farmer said:

Many farmers have changed crops in the intervening seasons because they have been altered ... Later, it was realized that many have abandoned rice cultivation as a result of the various problems associated with water scarcity.³⁸

Long droughts increase competition and violence over access to irrigation water, between farmers and between herders and farmers. A farmer explained the complexity of the situation:

Some farmers take irrigation water for themselves. Those who don't have access look for ways to access it from a neighbour and this creates conflicts. There was a farmer who attacked his

³⁸ Excerpt from an interview with a female farmer in Makobola, August 2021.

neighbour with a machete after several negotiations for the granting of water ... It is even difficult to regulate water in a rotational way because everyone needs it at the same time.³⁹

Another farmer said:

On the Lubunga River in Rugoze (Luvungi) where I grow rice, there are periods when there is strong competition for water. It is especially during the dry season that farmers compete. During this period, the rivers do not have enough water. Farmers then manage to disconnect the irrigation channels of their neighbours. Some come in the evening while the others have gone home. When in the morning it is found that canals have been disconnected, a number of farmers wield machetes to argue. Conflicts between farmers over water distribution and the management of irrigation valves have become very common.⁴⁰

Finally, in addition to grappling with meagre harvests, farmers witness their crops being devastated by cattle, leaving them helpless. This predicament prompts some farmers, unable to directly confront the herders, to opt for illicit actions such as stealing cattle or amputating their legs in complicity with armed group leaders or combatants.

Armed actors, mostly local Mai-Mai groups, play a key role in this conflict landscape between herders and farmers and between herders. These actors are called upon by both farmers or herders to exact reprisals. However, armed actors often take advantage of the situation to steal cows. Thus insecurity in the Ruzizi Plain is further complicated by the complex relations between herders, farmers and armed groups. Herders rely on armed self-defence mechanisms as a response to the insecurity of their livestock, while unarmed farmers in turn mobilize armed actors. And some armed group leaders who fall outside of these arrangements are reported to resort to cattle-rustling.

As one of many of our interlocutors confirmed, rains are currently scarce in Luvungi:

The drought has affected agricultural activities (especially the agricultural calendar). For example, after the B season harvest (August), there was a drought until today. That is, by now, people should

³⁹ Interview with a farmer in Makobola, August 2021.

⁴⁰ Interview with a monitor at the Mubula Primary School of the 8th CEPAC Sayuni Church in Sange, December 2021.

be consuming maize and beans (for the upcoming Christmas and New Year's celebration). But due to the lack of rain, there is a shortage of basic foodstuffs. As a result, the population of Luvungi must go to the neighbouring *groupements* of Bwegera and Sange to buy basic foodstuffs.⁴¹

In Luvungi, there are a few rivers that are used to irrigate fields, including the Ruzizi River and its tributaries, the Kamujeri and Kindobwe. In practice, irrigation is developed only for rice growing purposes (for irrigated rice species that requires permanent water throughout the cultivation period). However, some farmers combined crops with market garden produce in some rice-growing areas due to insufficient rainfall. This used to be possible anywhere but today it is no longer the case due to water shortages. This has increased competition for access to water. Conflicts identified here are caused by disconnections of irrigation pipes between farmers' fields. The solution to this problem is to organize irrigation (water-sharing) by rotation, but during low water periods, it is observed that farmers tend to violate existing arrangements. Initiatives to secure crops and access to water are developed at the farmer level. During the sowing period, some farmers spend the night in the field or hang out late in the evening to monitor the supply of water. To maintain this practice, contributions are paid which allow for the maintenance of irrigation canals. However, since after a long drought irrigation water demand is very high, this maintenance is not sufficient to provide water to all rice plots. The low water level is caused mainly because current discussions among farmers are not adequate in ensuring equitable sharing of water in view of the current state of the irrigation canals. Farmers rely on the intervention of NGOs and agencies to improve the supply of irrigation water and the security of the fields.⁴²

In Bwegera, irrigation is managed in a more structured way by farmers. They have benefited from the "*Maji ya Amani*"⁴³ project implemented by ZOA in consortium with other organizations.⁴⁴ Thanks to this project, a dam

⁴¹ Interview with a monitor at the Mubula Primary School of the 8th CEPAC Sayuni Church, Sange, December 2021.

⁴² Such as the *Projet de développement agricole intégré dans la région des Grands Lacs* (PICAGL), a regional project of the World Bank.

⁴³ *Maji ya Amani* (Water for Peace) was an integrated water resources management project in Luberizi.

⁴⁴ In the International Rescue Committee (IRC) (lead), Search for Common Ground (SFCG) and ZOA consortium, ZOA focused on the "Secure Access to Land", "Access to Irrigation Water" and "Agriculture and Inclusive Economic Recovery" outcomes (ZOA, 2019).

has been rehabilitated including the irrigation canals over an area of 1,250 ha (irrigated perimeter) for 3,500 farmers, who distribute water during the entire farming season. Water management is in the hands of an agricultural cooperative called “COPAILU.”⁴⁵ The farmers contribute an amount of rice to maintain the canals and pay its agents (for instance, the block leaders who regularly monitor all the irrigation canals and share the water according to demand). In this rice-growing area, fish farming and market gardening (vegetables, peanuts, etc.) are also practised. This shows that it is possible to reduce conflicts between ethnic and community groups and improve the stability of the Ruzizi Plain.

LAND CONFLICTS

In addition to tensions over scarce water resources, conflicts over land ownership are also prevalent. They further complicate the broader context in which climate change interacts with conflict dynamics. While these land conflicts typically occur between individuals, they also tend to become interethnic, thus fragilizing cohabitation between communities. The fact that the Bafuliru community wants to take precedence over other ethnic groups in the plain (Banyamulenge, Barundi, Batwa, Bashi), which have been present for several decades but are still considered foreign, leads to feelings of discrimination, exacerbating interethnic mistrust and violence.

In addition, the greed of certain customary chiefs is at the origin of conflicts that arise from the double or triple allocation of plots to individuals/subjects. Since customary chiefs cannot sell land, according to custom, they instead donate/allocate land in exchange for the payment of a tribute. However, it has been observed that these tributes constitute a form of “hidden” sale, due to the high degree of commodification of the gift. This practice of double or even triple allocation concerns mainly ‘unsecured’ land (without legal documents). In such cases, the files are handled first by the customary chiefs, who either divide the land ceded by the former to the subsequent buyer, or attribute it to the highest bidder. Other cases are transferred to the court. As an example, a civil society actor in Luvungi, a resident who had been

⁴⁵ Cooperative of the water users of Lubirizi.

occupying his land for many years, was surprised to see part of his land ceded to another person via the customary authorities. Resisting this allocation, he had been summoned by the court, which ruled in favour of the second purchaser. Consequently, he was arrested by state security services, who came to take him by force to the court in Uvira. Luckily, initiatives for his release by the civil actors of Luvungi led to his immediate release.

A RECONFIGURATION OF CONFLICTS OVER NATURAL RESOURCES

To conclude, this research has found that climatic disturbances have reconfigured conflicts over access to natural resources in the Ruzizi Plain. Pre-existing tensions related to transhumance have become more complex, involving different movements, more areas and a broader set of actors, including cross-border cattle owners. They still hold the potential to spark violence. While at the outset, competition for power, identity issues and access to land were considered the most recurrent and violent sources of conflict, competition for access to water has now become another new source of conflict. The scarcity of rainfall, the long period of drought and the near absence of irrigation policies hinder agriculture and increase competition over available wetlands and irrigation channels. Even though the population recognizes the benefits of existing mediation structures to resolve their conflicts, the effects of climate change in the Ruzizi Plain have further complicated the competition over resources.



Dry pasture at Sange (photo Patient Polepole)

5 | The role of customary authorities

Before, it was the mwami's griots who performed the rites to ask for rain.⁴⁶

The management of phenomena related to natural disasters is essentially the prerogative of customary authorities. For a long time, wild rivers have swept people away, but customary chiefs came to perform rites [incantations to the ancestors] to calm the rivers and save lives. Nowadays, many demons [ancestors] have become angry because we have abandoned our traditional custom. There used to be a river here where nobody could go around noon in the past ... At our border with Mwenga territory, there is a small river called 'Lwijilwalungwe' where the customary authorities went to do ancestral rites.⁴⁷

As guardians of ancestral customs and practitioners of customary rites and practices, as well as managers of rural customary lands, customary chiefs play an important role in Congolese societies. There has been increased recognition, also in the IPCC, of the fact that indigenous practices and knowledge have been too easily neglected and are a potential resource for climate change adaptation.⁴⁸ Without romanticizing their role, our research has tried to zoom in on customary authorities – *chefs coutumiers* – which hold an influential position and operate alongside formal local authorities in the Ruzizi Plain. Our findings show that in relation to climate change, conflict and security, their position is ambivalent. Tensions around their succession and communitarian background are a source of conflict in the region. And as will be explained below, the explanations of the causes of climate change they and their followers adhere to are contested by other members of their communities.

⁴⁶ Interview with Kabumbwe Lumali Jacques, Luvungi, 17 December 2021.

⁴⁷ Id.

⁴⁸ Rani, U. and Oelz M. (2019), Sustaining and preserving the traditional knowledge and institutions of indigenous communities: Reflections on the way forward. In: Indigenous Peoples and Climate Change: Emerging Research on Traditional Knowledge and Livelihoods. International Labour Organization, p. 125.

Nevertheless, these customary chiefs, with the cultural capital they can rely on, are also crucial in helping to alleviate impacts of climate change and environmental degradation. From their position of socially embedded authority, they can also play an instrumental role in mobilizing collective responses and in mediation in case of natural disasters or aggravated conflicts, and thus reduce the potential for tensions and conflict in a context of increased climate-related stress. The realization of that potential, however, is compromised by a number of problems and conflicts concerning both the chiefs' ontological position and their socio-political roles. Some of these issues are directly related to the way the symptoms of climate change are explained and experienced by different groups within the Ruzizi Plain communities.

Tensions between magico-religious explanations and rational-scientific readings

Magico-religious ritual practices have been essential factors for social cohesion and for the foundation of community identity in the face of natural disasters and environmental distress, events which also have undeniable cultural and spiritual significance.⁴⁹ During our research, we have found differing opinions regarding the customary chiefs' worldviews and cultural practices. One view, mainly expressed by a certain intellectual elite among our local interlocutors, maintains that the customary chiefs' magico-religious reading of climate change is problematic. Many others believe that they can provide answers to phenomena such as rain scarcity and natural disasters. What is clear is that the ontological perspective on climate change of tradition customary chiefs and their followers is a source of tension.

First and foremost, there is the fact that the influence of modernity, Christianity and Islam clearly have put pressure on traditional practices and belief systems, and thus on the actors who are considered guardians of traditional beliefs. Several customary leaders and inhabitants believe that respect for ancestral and customary practices is intricately linked to environmental phenomena and see a link between the climate disruptions they experience and the abandonment of these traditional and ancestral practices. Furthermore, the

⁴⁹ See for instance Etim (2019); Verschuuren et al. (2021)

conversion of certain customary chiefs and their populations to Catholicism, Protestantism and Islam has contributed to the erosion of the local conception of customary power as a provider of services/responses through rites in the context of natural disasters.

So, when trying to explain the causes of various forms of environmental distress linked to climatic disturbances, such as drought, the position of most of the customary actors is centred on a spiritual (magico-religious) reading. They explain climate change and its effects by the abandonment of customary rites of communion with nature, which is in turn amplified by conversion to Christianity, which induces the ancestors to punish the living, hence the effects of current climate change. While local conservative opinion, its holders perceiving a 'Christian faith' versus 'traditional custom' dichotomy, strongly opposes Christianity, some customary leaders have still preferred to work within Christian tradition. The most illustrative example is that of a customary authority in the Luvungi *groupement* who, at the same time as being a custodian of custom, is also a member of the Catholic charismatic movement.⁵⁰ He is very much involved in the movement and over the years has increasingly moved towards Christian religious rites, to the detriment of traditional practices, while retaining his position as custodian of custom. His abandonment of ancestral practices is interpreted by some of our interlocutors as a cause of adverse climatic conditions and disasters which the population experiences. A Luvungi customary authority said:

In the event of prolonged drought, the kings had rituals to make it rain. Moreover, kings from other entities used to come and ask for rain here in Luvungi. And also, whenever we had a king who was not quite customary, it often had repercussions on the rainfall or on people's health... The current generations of kings [customary chiefs] have stopped practising traditional rites. Christianity has come to break traditional practice, with accusations of Satanism. Man is defined by his asili [the original tradition or custom in Swahili], when one has no asili, one is nothing.⁵¹

⁵⁰ The Catholic Charismatic Renewal or Catholic Charismatic Movement is a revivalist movement which emerged in 1967 and focuses on personal experience with God through the Holy Spirit.

⁵¹ Interview with a customary authority in Luvungi, 18 December 2021

Thus, with the diffusion of modernity and scientific knowledge and the expansion of religions into the customary sphere, the system of social representation has evolved in customary entities.⁵² This cultural mixing has led, over time, to a certain tension between the spiritual (magico-religious) and scientific (rational cause-and-effect) interpretations when making sense of or explaining social events and/or natural disasters. This tension is further complicated by the fact that climate change is a global phenomenon whose tangible effects are mostly experienced locally and on a personal level.⁵³

Furthermore, in opposition to the customary chiefs and their followers' magico-religious interpretation of environmental distress, a number of other local voices among our interlocutors foreground a different, less spiritual reading of contemporary climate stress, grounded in experiences of local environmental decline. In their understanding, human activities, and more precisely intensive deforestation, are an important factor in the way climate disruption affects local communities in the plain. One farmer said:

The origins of climate change remain the presence of Burundian and Rwandan refugees. In Lubalika, there was IPAK [Industrie des produits agricoles au Kivu] with more than 945 ha where the [Belgian colonists] had planted trees because they knew the problems that would arise ... There were also 900 ha of IPAK land in the south of Lubalika in a part now occupied by Mr Olive Mudekereza. He had all the trees cut down for trade with the UNHCR and for the production of firewood and fired bricks. Part of the 42 ha of trees left by the whites [Belgian colonists] for shade has been occupied by INERA [National Institute for Agronomic Study and Research].⁵⁴

Another interlocutor adds:

In 1993-94, when the Burundian and Rwandan refugees came, the trees were cut down in a savage way. The trees were cut down to build houses, to make charcoal and to make bricks. All the fruit trees were even cut down. Today people don't have the culture of planting trees.

⁵² Konaté, D. (2008): The paradigm of the opposition tradition/modernity as a model for the analysis of African realities. In: Adame Ba Konaré ed., *Petit précis de remise à niveau sur l'histoire africaine à l'usage du président Sarkozy*, 95-109. Paris: La Découverte.

⁵³ Limaye, V.S. (2021): *Personnaliser la crise climatique en mettant l'accent sur la santé humaine*. *Changement climatique* 166, 43.

⁵⁴ Interview with a farmer, Luvungi, 18 December 2021.

We have all cut down even the sacred trees. The brick manufacturers don't even think about anything anymore. For it is only to have money.⁵⁵

At the same time, some of these interlocutors, who belong to the local intellectual class, criticize the inadequacy and effectiveness of government environmental policies on the ground. A Sange community leader said:

When there is no environmental protection policy, you can't have rain. The rain that falls on the plain comes from Itombwe [Mountain range and ecosystem on the west of Lake Tanganyika]. The same rain falls on Rwanda and Burundi because they also cut down the trees. The problem of rain is environmental. We have a government that has no policy on the protection of vegetation.⁵⁶

Other frictions and conflicts surrounding customary rule

In addition to these tensions between tradition and modernity, there are other forms of friction which affect the customary chiefs' position and their capacity to play a role in alleviating the impacts of climate change. First, there are the conflicts over succession in certain arenas of customary power, whereby the exercise of customary power in some areas is affected by internal power struggles. Second, there are the 'parallel power' situations in some places, where interethnic competition strongly marks the realm of customary authority. Third, and less openly visible, we have observed inter-generational conflicts among customary chiefs. As described above, some newly enthroned customary chiefs are opposed to the ancestral practices proposed by the elders to manage crises. This, in turn, is interpreted by some in the community as a cause of climate distress.

Additionally, we can observe newly appointed urban authorities and village chiefs acting in a common territorial space, where public authority is marked by competition between customary and formal authorities. Characterized by a dissymmetrical relationship, this cohabitation triggers tensions in territorial

⁵⁵ Interview, 17 December 2022.

⁵⁶ Interview with a community leader, Sange, December 2021.

governance as well as in planning policies.⁵⁷ For example, in the commune of Sange, some citizens continue to pay allegiance to the customary village chiefs rather than to the municipal authority, even though they are in a municipality and thus in an extracustomary entity where customary chiefs have no formal position nor can they impose their rule. Often, initiatives launched and/or encouraged by the municipal administrative authorities are flouted by certain customary authorities and the subjects who still have allegiance to them. The fact that the customary authorities consider themselves to be dispossessed of part of their power to the benefit of the municipal authority recently established in the rural communes means that tension persists between these two sources of public authority. This is why certain decisions, including the decision to combat climate change, have become driven by settling scores between these authorities. And finally, it's important to note the gender dimensions of the frictions around customary power: we observe that parts of the community deem women unsuitable to take on these roles. All these conflicts have a negative impact on the coordination of efforts in the communities to combat the effects of climate change. Population groups each line up behind the chief they consider legitimate. When one chief mobilises the population, the other demobilises them, making it difficult to implement measures.

It is important to keep in mind that for local communities, customary chiefs are also intricately linked to certain practices of forest protection and of animal/biodiversity conservation for ritual and cultural reasons. They produce regulatory guidelines on the relationship of individuals with nature and enforce them through certain prohibitions. In these matters, they have the potential to obtain the support of large parts of the population, who believe in the consequences of transgressing the rules put in place by the chiefs. Thus we can observe the existence of virgin forests and community forests where trees are not cut in any way and where no animal species are ever hunted. While the preservation of certain forests under the impetus of customary chiefs served ontological arguments (the forest as a place of worship, of structuring the relationship between the ancestors and the living), it also serves environmental causes and as such help to render the landscape less fragile in the face of climate change.

⁵⁷ See for instance Vanier (2000); Racaud (2016); Ubilla-Bravo (2020).

Solidarity mechanisms and conflict resolution by customary chiefs

Local leaders and chiefs also cooperate, in terms of both security and mutual assistance between communities during natural disasters. In terms of security, local chiefs consult each other and take joint action to combat crime and cross-border insecurity. With regard to natural disasters (landslides, erosion or the rising waters of Lake Tanganyika observed recently in Makobola and elsewhere), our findings suggest that chiefs promote solidarity and are involved in mediation of land use conflicts arising from these disasters. Two examples deserve to be presented here in order to understand the forms of solidarity between villages in the event of natural disasters. First, solidarity in the management of available grazing land in the event of the presence of transhumant cows; and second, the harmonization of reforestation policy when this requires the support of neighbouring villages despite tensions.

Indeed, showing solidarity has become a common practice between villages during climatic disturbances. Some of them welcome transhumant herders because of drought-induced scarcity of pasture. The most striking example is that of Luvungi. Confronted with a degradation of pastures and insecurity of their cattle due to banditry, herders from Bwegera and Sange, have occasionally moved their animals to the Luvungi Kraal. As this kraal consequently became too small to meet the demands of the herders and their cattle, the authorities decided to enlarge it. However, farmers are not excluded from these cross-village solidarity practices. Our empirical evidence shows them to be involved in the resolution of conflicts resulting from the effects of landslides and erosion, which can change or reconfigure the boundaries of fields, plots or agricultural areas. To respond to such cases, both individual and collective efforts are called upon by chiefs. In the case of rising waters, for instance, affected villages have developed solidarity under the leadership of local leaders and partners, mobilizing the community but also through collective actions of “salongo” (community work).

An ambivalent position between conflict actors, mediators and co-producers of environmental resilience

So even if the culturalist arguments which are put forward by traditional customary authority hold that climate change and its negative effects on the populations of the Ruzizi Plain is a manifestation of the wrath of the ancestors, customary leaders are still to be considered key actors, with real social power and constituencies, who can play an important role as co-producers of local resilience and reduce the potential of climate change to aggravate local conflicts.

As regulatory actors, traditional leaders/local authorities often provide justice or mediation in resource-based conflicts, which as we have seen in the previous section, are on the rise in the plain. As holders of customary capital, they are in a position where they can play a role in mobilizing various actors around projects of collective interest such as reforestation. And although customary leadership is in itself an important stake in conflicts in the plain, these leaders have not completely lost this legitimacy or 'customary capital'.⁵⁸ And the enactment of the 2015 law on the status of customary chiefs by the Congolese government has significantly reinforced their influence in safeguarding the environment.⁵⁹ This legislation explicitly reiterates the customary chiefs' responsibility in preserving cultural identity and traditional moral values, as well as their active role in upholding national unity and cohesion. The law acknowledges their right to be consulted by public authorities. While the customary chiefs inherently possess authority over natural resources and communities at the customary level, the state has amplified this authority by recognizing their duty to protect local community land and preserve cultural heritage and ancestral sites, including sacred customary locations (as outlined in Article 10 of the law). This legal framework has endowed customary authorities with not only customary capital but also political and legal capital, thus rendering them indispensable in addressing

⁵⁸ Hoffmann, K. et al. (2020): Races for power: The struggle over customary capital in the eastern Democratic Republic of Congo.

⁵⁹ RDC, 2015, Loi n°15/015 du 25 août 2015 fixant le statut des chefs coutumiers, Kinshasa, 2015.

issues related to access to natural resources, climate change, conflicts, and collective solutions to local problems. Indeed, there is a notable resurgence of customary power in these spheres.

However, as we have also seen, these customary chiefs are under pressure, and it remains to be seen to what extent they will be able to continue to play a role in the fight against climate change when conflicts and tensions arising from the effects of global warming continue to increase. Our research does suggest that for the sustainable preservation of environmental ecosystems in the Ruzizi Plain, modern nature preservation logics should be better reconciled in an interdisciplinary approach with socio-ecological logics rooted in local knowledge and traditional nature conservation practices. Any intervention aimed at promoting restoration of the landscape and protection of the broader environment and other measures to increase the resilience in the face of climate change should take into account this cultural capital of customary chiefs in the Ruzizi Plain. This is a matter of coherence with the law that recognizes their right to be consulted when it comes to local development on the one hand; and on the other hand, customary chiefs are invested with the role of protection of landscapes and promotion of social cohesion. Strategies and actions aiming at reducing climate change and its effects could not be envisaged without building on the power of customary authority.

6 | Conclusions and policy implications

Much of the debate on the climate change-conflict nexus has long focused on whether there were causal links between climate change and violent conflict. As has been convincingly argued in recent literature, and acknowledged in the latest ICCP report, such straightforward causal links are more than often difficult to establish. What we do know, however, is that the relationship between climate change and conflict is often more indirect and complex. While some consensus has been established around the notion of climate change as a risk multiplier, it remains important to further contextualize such qualifications, and be aware of case-specific factors at play. A fragility approach is a fruitful way to shed light on differentiated contextual vulnerabilities and thus to better understand local entanglements between climate change and conflict dynamics.

This case study has provided some important insights into the way in which climate change effects play out locally in South Kivu's Ruzizi Plain, and how they interact with, add to, or alter existing conflict dynamics in this territory. It has found that both sudden onset climate change impacts, such as flooding, and slow onset impacts, such as drought and changing vegetation patterns, aggravate livelihood vulnerabilities and existing tensions over resources within Ruzizi Plain communities.

A first insight is that the socio-spatial context of the Ruzizi Plain is shaped by decades of local and regional violent conflict. In the aftermath of civil wars in neighbouring countries Rwanda and Burundi, the presence of huge numbers of refugees and the ensuing urbanization have altered the physical landscape via massive deforestation and rendered the physical environment more vulnerable. It can be safely stated that historic conflict has strongly contributed to the environmental degradation which today makes the Ruzizi Plain more vulnerable to climate change effects.

Second, looking at contemporary evolutions, local communities experience the effects of climate change in tangible and concrete ways. They observe drastic changes in the environment and in the climatic conditions which have long been able to sustain various livelihood options and economic development in the plain. Today, these options are under pressure. While there is a striking lack of reliable, accessible, and up-to-date data about the biophysical effects of climate change in the Ruzizi Plain, the impacts of climate change contribute considerably to various forms of socio-economic distress for communities and authorities. Additionally, adverse weather such as excessive rains and natural disasters caused by rising lake water levels, have contributed to catastrophic situations in which many people lost their houses or some of their land. There is little doubt that environmental degradation linked to climate change contributes considerably to the various pre-existing vulnerabilities of communities and families in the conflict-affected Ruzizi Plain. Understanding, and addressing these vulnerabilities, is of utmost importance.

Third, the study has focused on two dimensions of fragility related to a changing climate and deteriorating environment. On the one hand, we adopt a socio-ecological approach to economic challenges to understand the vulnerabilities of local communities in terms of livelihoods in a changing climate and how these challenges interact with existing societal tensions and conflict. On the other hand, we focused on socio-political vulnerability, looking at the role of local institutions and forms of authority in a context of climate change and conflict.

In terms of livelihood vulnerabilities and their relationship to conflict, we have observed that in the Ruzizi Plain the effects of climate change are transforming existing tensions and conflicts around transhumance practices. More particularly, recurring drought provokes new cattle movement dynamics within and around the Ruzizi Plain, shifting identity fault lines in previously existing conflicts, and creating new conflict dynamics. One such new dynamic is internal: “horizontal transhumance”, whereby herders from lowlands seek new pastures in the plain. Another is more regional in nature, with cross-border movements from mainly Burundian and Rwandan cattle herders who try to evade enforced sedentarization of cattle in their

respective countries. Both of these new dynamics complicate the existing tensions around ever more scarce grazing lands. We also observed that existing governmental and non-governmental conflict resolution mechanisms are increasingly unable to play their role in the face of these new transhumance dynamics and persistent conditions of drought and pasture scarcity.

In addition to conflicts among herders, conflicts between herders and farmers have also increased because of these new and or intensive cattle movements. Likewise, conflicts over natural resources also involve water for agricultural use, which is becoming scarcer. Furthermore, various armed actors and self-defence groups present in the Ruzizi Plain are sometimes mobilized to settle scores in these conflicts between different stakeholders in a context of degrading and scarce resources. In this sense, although climate change is not the primal cause of conflict-related vulnerabilities, it can be stated that there is a risk-multiplier effect at play in the Ruzizi Plain, whereby changing environmental conditions can transform and aggravate existing tensions and provide additional opportunities for violent actors to assert their position.

The fragility approach also allowed us to look at local institutions in relation to the effects of climate change, with a focus on the role and position of customary chiefs in the Ruzizi Plain. On the one hand, these customary authority figures have the potential to contribute to solutions for the many challenges climate change brings along. Firstly, in a context of increased competition over resources, customary chiefs are important figures in terms of local conflict resolution, handling tensions and orienting alternatives. Also, they are by many people considered guardians of customary traditions, which include regulating the ways communities relate to their environment. As such they can contribute to better protection of natural resources through their traditional knowledge and practices, and make the Ruzizi Plain more resilient to climatic shocks. The Congolese state has reinforced their position and reinvested them with the role of protecting community natural resources and promoting social cohesion. Finally, they can promote solidarity between villages and communities when they are affected by catastrophes linked to climate change, as we have witnessed. However, the prevailing conflicts over succession within this institution can sometimes complicate their potential, and the state could play a more

informed role to prevent and resolve these conflicts. Furthermore, there is a tension between the way some customary chiefs explain the occurrence of droughts and other natural disasters, and the interpretation of these phenomena by other elites, who rely on a more modern, scientific understanding. And a part of the population in the plain considers that some of these authorities are in conflict with the traditional culture and the ancestors, and that they are not able to prevent natural disasters, precisely because of their perceived abandonment of customary traditions in favour of other religions or modern repertoires of power.

Policy implications

Based on these findings, we want to provide policy-makers with some considerations when intervening in the case study area.

- 1 First and foremost, taking climate change and its effects seriously in the Ruzizi Plain means **investing in and supporting the development of an integrated agropastoral system** which:
 - considers climatic irregularities and is adapted to an environment in distress;
 - is sensitive to the sources of tensions prevailing in the area over certain resources, such as grazing pastures, irrigation, and arable plots, and avoids further escalations of such tensions;
 - targets both the provincial as well as the local administrative levels;
 - recognizes the crucial role as well as the precarious position of customary authority structures and local institutions in governing such a system and mediating conflicts between various stakeholders and resource user groups;
 - develops viable alternatives to current cattle movement practices – this can be part of a multi-actor dialogue on the ground.

2 Specific **direct measures and interventions to alleviate the local effects of climate change** include:

- rethinking the policy on human occupation of the 10-meter shoreline, in light of flooding and the gradual rise in lake levels;
- better accompaniment and planning of displacement and mobility from flood-prone areas to other localities where affected households search for available land in response to climate-related distress and natural disasters – the ad hoc manner in which this actually happens is prone to generating tensions over land use;
- measuring to upscale and upgrade water catchment and irrigation infrastructure – the logic is that more and better functioning infrastructure will increase availability and diminish tensions which arise out of water scarcity;
- massive reforestation of the landscape to render it more resilient to the vagaries of a changing climate and especially excessive rainfall;
- the recognition of and further investment in locally embedded institutions involved in conflict resolution, with special attention to their role in managing natural resources;
- funding and supporting action-research projects on climate change – as there is a dearth of easily accessible knowledge and information on the many dimensions of climate change in the Ruzizi Plain – to inform public policy and civil society interventions, including permanent support for local meteorological centres which can produce regular, reliable, and publicly available meteorological information and statistics;
- identifying and valuing locally embedded knowledge, practices and ways in which people organize their relationship with the environment, which can contribute to climate change mitigation and adaptation and reduce loss and damages;
- preventing and resolving existing conflicts over succession within the customary authority by privileging more informed administrative decisions;
- taking strong and sustainable measures to prevent land grabbing, massive deforestation and excessive exploitation of natural resources.

- 3 The Ruzizi ecosystem is regional, and both **climate change and conflict are unrestricted by national boundaries and have important regional dimensions**, thus it is crucial to:
- set up a permanent mechanism for dialogue, consultation and information-sharing between Congolese, Burundian, and Rwandan officials, academics (universities, higher education institutes, research centres) and non-governmental actors, in which shared, regional challenges regarding climate change can be addressed, as well as issues impacting neighbouring countries' climate resilience and conflict vulnerability (such as transborder cattle movement);
 - contribute to diplomatic solutions to address the issue of foreign and in particular Burundian armed groups in the Ruzizi Plain – given that climate change will undoubtedly lead to an increasing number of disasters such as floods, droughts and forest fires, and force the populations of one country or region to move to another country or region, the establishment of a legal framework that anticipates the regional effects of this phenomenon must be considered an emergency matter for the DRC.

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