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TRANSHUMANT PASTORALISM AND PROTECTED AREAS IN CENTRAL AFRICA: FROM CONFLICT TO PEACEFUL COEXISTENCE

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Today, management plans for protected areas are taking into account challenges affecting their peripheries. Their effectiveness depends on it. In the Sudano-Sahelian zone, conservation officers can no longer ignore problems related to transhumance and the dynamics of pastoralism. Protected areas in Chad and the Far North Region of Cameroon have faced these issues for some time. They are now also affecting other protected areas located further south. These include the national parks of Bouba-Ndjida, Benoue and Faro in Cameroon, the complexes of protected areas in the northeast and the Chinko region of the Central African Republic (CAR), and Garamba National Park and Bili-Uere Hunting Estate in the Democratic Republic of the Congo (DRC).

While transhumant pastoralism has been practiced for many years in these areas, the expanded network and strengthened management measures of protected areas – known as "paper parks" – have focused attention on the question of the coexistence of protected areas and transhumance.

In 2019, the N'Djamena conference made it possible to include this topic in the policy agenda of Central African regional institutions. However, the linking of transhumance, poaching, illegal trafficking and the movement of armed groups steered discussions towards a security approach to transhumance. Conservation officers of protected areas cannot effectively manage such an approach alone as they have neither the means nor a mandate to deal with security issues.

This chapter attempts to explore the interface between protected areas and transhumance, a form of pastoralism. It highlights the broad elements needed for understanding this issue while emphasizing the fact that the way it is expressed varies depending on the specific characteristics of each site and protected area.

Pastoralism contributes significantly to the Gross Domestic Product (GDP) of Central African states. It is a complex production system characterized by mobility that can take many forms depending on the environment. It is currently subject to heavy pressures, both short-term and structural, and the way that pastoralism evolves will dramatically change the management of protected areas in the long run.

Protected areas are confronted with this challenge in various ways depending on their location along transhumance routes. How then can the management of protected areas be adapted to transhumance? All stakeholders agree that there is a need to test new approaches to cohabitation that are tailored to the specific features of each site.

1. Transhumant pastoralism in Central Africa

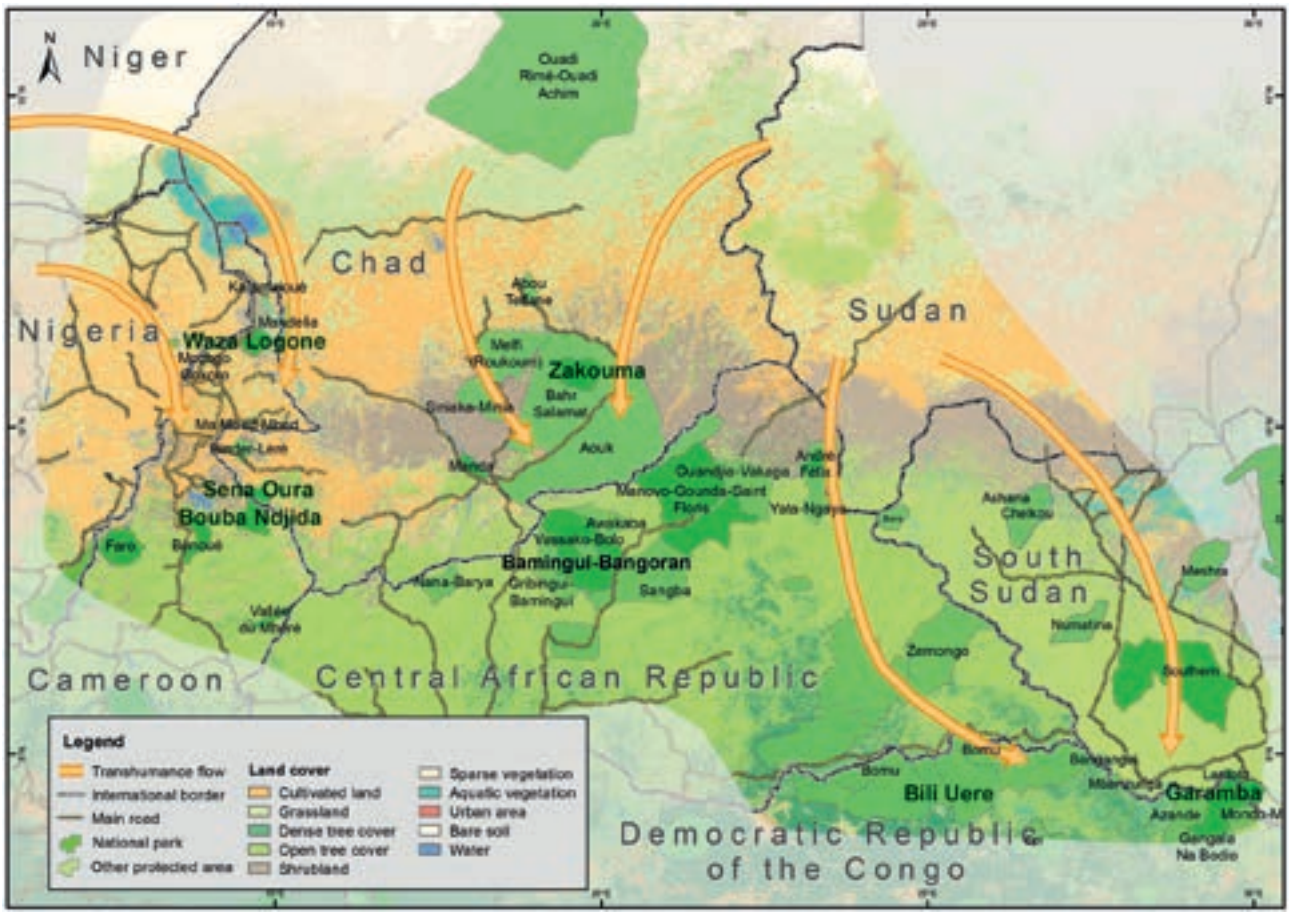
Transhumant pastoralism is a key economic sector and a complex production system.

1.1 A key economic sector

Pastoralism is a major economic, political and social sector in Central African countries such as Chad, CAR, Cameroon, and DRC (Figure 1). Transhumant pastoralism is not a new phenomenon in Central Africa. Since the mid-18th century, groups of pastoralists from Sudan and Uganda crossed through high-altitude wetlands in what is now DRC. The same is true of pastoralist groups from Niger and northern Nigeria who spend the better part of the dry season in the Logone floodplain. Sudano-Sahelian pastoralists have travelled within and outside CAR since the start of the 20th century.

Today, pastoralism is a key economic activity in countries such as Cameroon, Chad and CAR. In 2012, it represented 35% of agricultural GDP and 5.85% of total GDP in the Central African Economic and Monetary Community (CEMAC) region (CENUA, 2012). According to the United Nations Food and Agriculture Organization (FAO), the member states of the Economic Community of

Figure 1 – Area of expansion of transhumant pastoralism in Central Africa



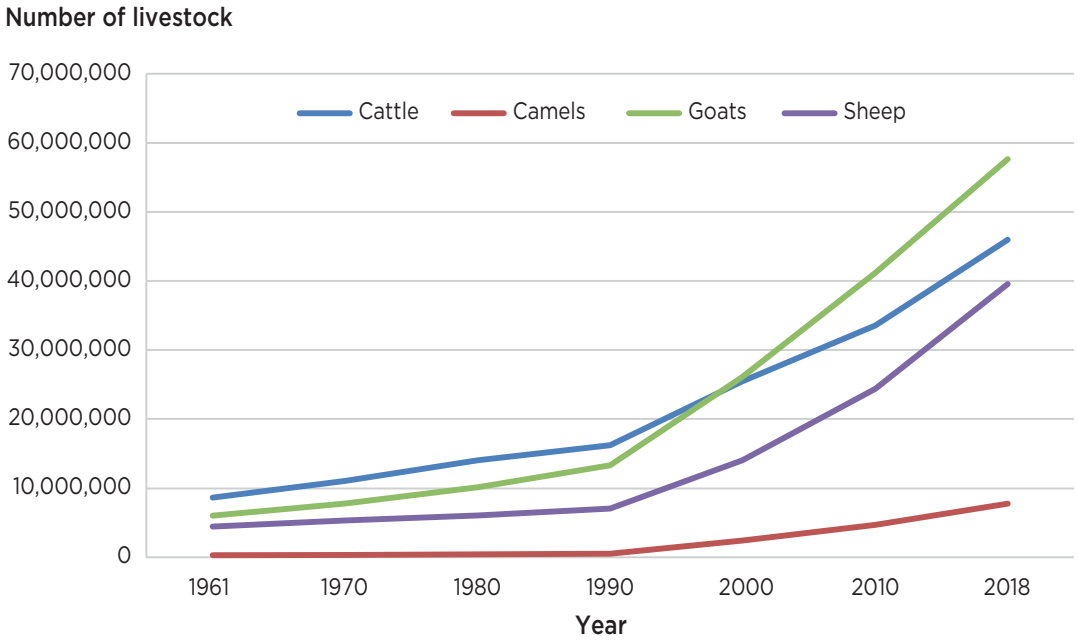
Central African States (CEEAC) are home to around 46 million cattle, 7 million camels, 57 million goats and 39 million sheep (FAO, 2020). Although the reliability of data related to this sector is debatable, the studies available indicate a strong growth in livestock since the 1990s (Figure 2).

In Chad, according to the 2017-2021 National Livestock Development Plan, this sector accounts for between 30 to 50% of the country's exports (excluding oil). Annual income flows are estimated to be around 140 billion FCFA and the added value at 210 billion FCFA. The size of the national herd is estimated to be over 20 million heads and transhumant pastoralism accounts for 80% of Chad's livestock production. Livestock production involves nearly 40% of the working population and indirectly benefits 70% of the country's rural population (CNUCED, 2019). Similarly, this sector has always played a prominent role in CAR's economy: before the 2013 crisis, it contributed up to 18% of the national GDP, or 60 billion FCFA in absolute value, and more than three billion FCFA in export earnings (FAO, 2018). In Cameroon, this contribution to national GDP is thought to be at least 9%; in 2016, the GDP of the livestock and hunting sector was estimated at 226.8 billion FCFA (République du Cameroun, 2011 and 2017). These figures demonstrate the economic strength of the sector for Central Africa and consequently the stakes it represents for the countries and their governments.

1.2 A complex production system characterized by mobility

Pastoral systems manage 80% of Central African livestock and are characterized by animal mobility. These production systems make the most of the seasonal availability of pastures and limit risks associated with climate uncertainty which are specific to Sahelian environments. They involve the regular movements of herds between "fixed points": seasonal pastures, water points (wells, boreholes, ponds, etc.),

Figure 2 – Evolution of livestock in Central Africa from 1961 to 2018



Source: FAO (2020).

villages and markets. These movements are usually predictable because pastoralists and their herds generally follow the same paths in the same season each year to reach pastures which are known to them. Depending on the case, these movements may be either pendular (moving from one point to another with a return by the same path) or circular (following a loop bringing them back to their starting point), but are rarely random (OCDE, 2014). Several factors contribute to determining the movements: environmental conditions of the areas travelled across, accessibility of resources, herd composition and type of animals (dromedaries, cattle, goats, mixed), presence of markets, existence of borders along the path, security climate, system of alliance and social agreements, etc. These are all elements that, combined together, precisely determine the direction of the movements.

The composition of the herd is the primary factor dictating the type of transhumance. Depending on the type of animal (cattle, goats or dromedaries), pastoralists must calculate the distance to cover between two water points. Cattle and small ruminants rarely move more than 30 km per day. Likewise, the nature of the water points, which are shaped by soil characteristics, in a given area greatly determine the pace of movement and the direction of the path chosen by the pastoralist. Pastoralists guiding large cattle herds avoid wells and boreholes where animals cannot drink quickly, and favor stages between ponds.

As stated above, pastoralists take into account many other elements to define each stage of their itinerary in a very specific way (Figure 3). They also know that the journeys planned can change significantly during the transhumance depending on the state of the water points, the vagaries of ecological conditions, the various problems encountered, etc.

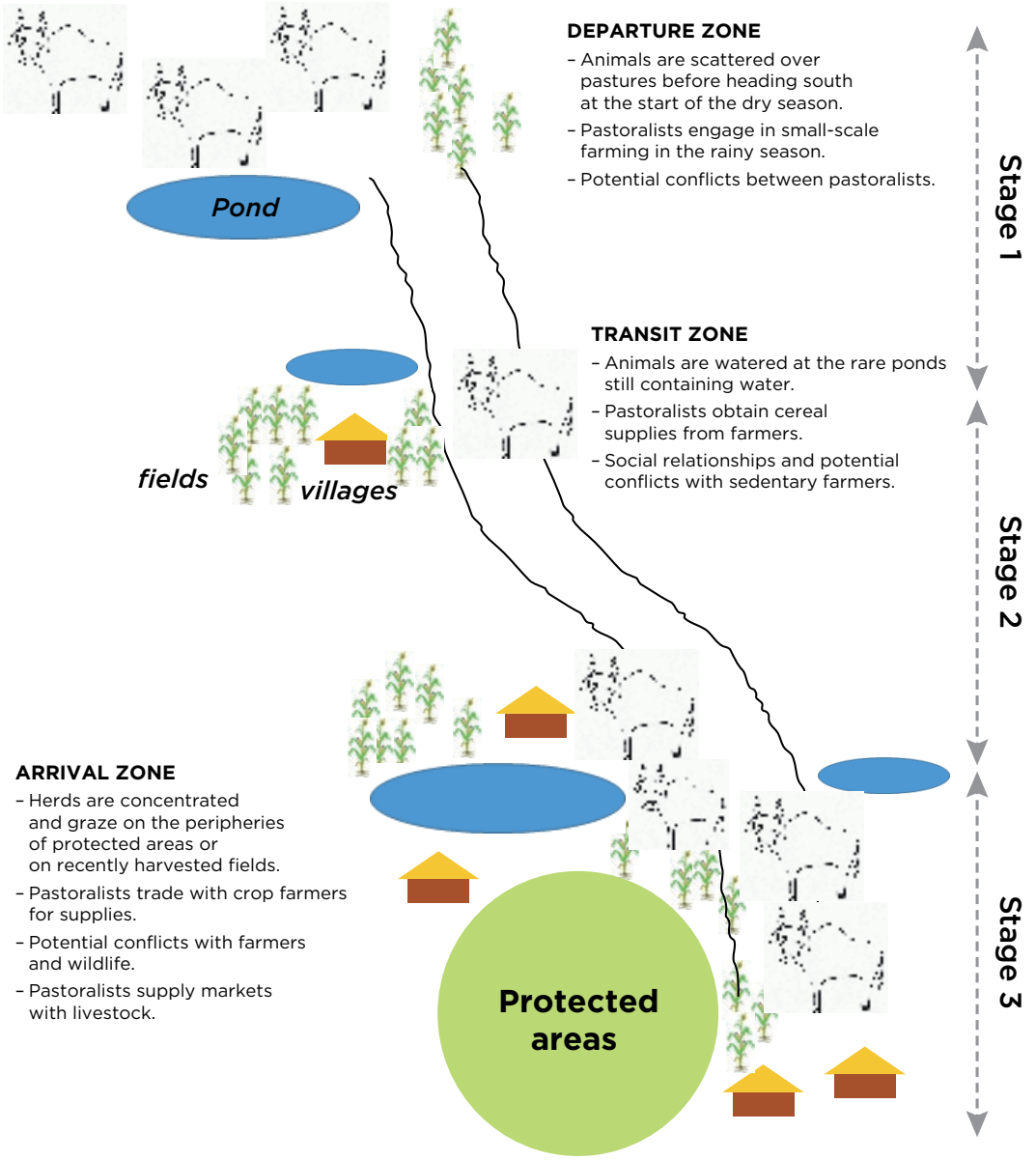
Transhumance generally begins shortly before the start of the dry season. The overall direction is from the north to the south (Figure 3). Transhumant pastoralists tend to prefer itineraries that enable them to reach their host destination as quickly as possible. The return north begins before the arrival of the first rains. The pace of the descent and return depends on known constraints along the path (for example, river crossings and harvest periods blocking the corridors). The stages are carefully chosen based on information collected from informants and the pastoralist's personal experience. Over the past 10 years, improved telephone network coverage in pastoral regions has considerably changed the practices of pastoralists, enabling them to remotely assess

the resources available in the destination areas. The information collected also covers trade terms (market information systems), border crossing points, health and safety situation, etc.

Pastoralists also adjust their movements according to alliances that they may have made during past transhumance seasons. These complex alliances, struck at different scales (tribe, lineage, reciprocity system), can involve other groups of pastoralists or sedentary farmers. These alliance systems render it possible to regulate herd movements at the level of each stage making up the overall transhumance route. In theory, they make it possible to coordinate and monitor the schedule of pastoralists' departures on transhumance, as well as to regulate flows through critical areas. They provide information about farming calendars along the planned routes so that the pastoralists remain alert and go around fields located along the routes. Alliance systems also are responsible for deterring a huge influx of herds, authorizing access to local resources and facilitating the dispersion of animals over seasonal grazing lands to reduce pressure on certain resources.

Ultimately, each pastoralist practices a distinctive form of pastoralism which is based on the composition of his or her herd, the seasonal availability and

Figure 3 – Transhumance routes and stages



accessibility of resources, and his or her information networks and effective alliances. Consequently, any attempt to classify pastoralism is inevitably simplistic. Nonetheless, four major types of pastoralism can be distinguished:

- **Nomadism**, which describes a mode of operating with the continuous, unpredictable movement of all members of a family or a group. Certain Peul groups may be viewed as practicing nomadism. They began their movements from the Cameroon border starting in the 1920s, and from western Chad in the 1990s. Since then, their migrations have led them into eastern CAR and northeastern DRC.
- **Long-distance transhumance**, which favors long journeys to and from a destination. In eastern Chad, those practicing this kind of pastoralism leave their home areas in the middle of the country at the end of the rainy season to head south towards the border with CAR, where they spend the dry season. They prefer to move in stages from pond to pond, rapidly descending south en masse, avoiding the risk of floods or, to the contrary, ponds drying out early. At the end of the dry season, the animals return north to their home territories. These seasonal transhumance journeys can cover distances of up to 1,500 km.
- **Medium-distance transhumance** involves shorter movements, on territories circumscribed by watering points or campsites where the pastoralists' families live on a permanent basis. The herds are smaller. The range of their movements varies greatly depending on the characteristics of the sites and seasons.
- **Agropastoral livestock farming**, or **semi-transhumance**, is the type of pastoralism most widely practiced today by the majority of agropastoralists. Daily movements covering a few kilometers enable nearby pasturelands to be grazed. Only some family members are mobile on a seasonal basis, the remainder engage in sedentary agriculture.

1.3 Constraints and changes in contemporary pastoralism

To accurately determine how the interface between pastoralism and protected areas is evolving, it is important to understand the global pressures and changes currently affecting pastoralism, including climate change, insecurity, agricultural policies and market integration, and population growth. These will continue to have a long-term impact on transhumance. These pressures, which are both short-term and structural, are determining transhumant pastoralists' current behavior and the evolution of transhumance routes. They explain in part the problems encountered in the management of protected areas.

1.3.1 Climate uncertainty

Since the 1970s, the Lake Chad basin has been experiencing a drought marked by reduced rainfall, a southward shift in isohyetes of about 200 km and increased temperatures (UICN & CBLT, 2007). Since the 1990s, there has been an overall trend towards resumed rainfall in the Sudano-Sahelian zone. This dynamic is nonetheless related more to the intensity of rainfall events than to a prolongation of the rainy season. Furthermore, intermittent droughts have been occurring more frequently in recent years.

Under these uncertain climate conditions, pastoralists are extending, reducing and modifying their routes. Over the past 20 years, Chadian long-distance transhumance pastoralists have been venturing ever further south in search of pastures that remain viable late in the season (Figure 4). This phenomenon is not only due to climate uncertainty. It also is due to an overall increase in herd sizes, which is driving the search for new pasture land. Climate uncertainty thus must be considered alongside other factors, such as improved animal and human health (lower mortality rate for those under 15 years, more adults, thus the need for more animals).

While many pastoralists return to their home territories at the season's end, some groups also set up semi-permanent camps on the new pastureland and leave a few family members there. The latter wind up settling down and engaging in small-scale farming. They then organize the movements of their animals over shorter distances around these new anchor points. The combination of livestock and crop production is a common diversification and risk-mitigation strategy related to climate hazards. It also is a strategy implemented by crop farmers who invest in livestock and whose animals are added to those of the transhumant pastoralists during the dry season.

Figure 4 - Evolution of the main transhumance routes between 1970 and 1990

Source: FAO (2012).

1.3.2 The burden of insecurity

Deadly cattle raids have long been carried out periodically between groups of transhumant pastoralists to gain access to pastures or strategic water points. Conflicts with farmers are likewise recurrent. However, over the past few years, insecurity is leaving an increasing mark on pastoral areas in CAR, eastern Chad, and northern Nigeria (Bonnet, 2013).

In fragile states, transhumant pastoralists are regularly subject to abuse from rebel groups. This abuse includes the payment of taxes, livestock theft, kidnappings and ransom demands. In response, transhumant pastoralists are tending to arm themselves to protect their livestock and their families. They sometimes opt to regroup their herds *en masse* and join forces to guard the animals, limit their movements on certain stages, or on the contrary accelerate to pass certain areas at risk. Some also put themselves under the protection of rebel groups in exchange for in-kind payments to facilitate their passage and access territories under rebel control. This mechanism has been essentially institutionalized in northeastern CAR through a well-established system of taxation and rights of passage laid down by the rebels. Pastoralists are required to provide services to the rebels and thus sometimes become their allies against their will.

This militarization of transhumance reinforces feelings of insecurity and instability. The recent spread of firearms among transhumant pastoralists is raising the specter of arms trafficking and the wide-

A map of transhumance routes redrawn by insecurity

Insecurity is increasingly manifest along all of the transhumance routes of the Sudanian region in Central Africa, and is without doubt the main contributor to the recent redrawing of the general map of transhumance. Three major crises have directly affected the organization of transhumance in Central Africa over the last 20 years.

In the 2000s, the Darfur crisis forced pastoralists in eastern Chad to abandon their traditional transhumance routes, which had become too dangerous along the border with Sudan. They shifted westward onto other, lesser known transhumance corridors on which they had weaker social relationships with sedentary villages (Bonnet, 2013). Numerous local conflicts between pastoralists and farmers thus multiplied along the new routes lying east of Zakouma National Park.

The crisis in CAR began in 2013. It again altered the map of transhumance routes in a broader manner. Until then, a large community of Peul pastoralists had occupied western CAR. Under pressure from Anti-Balaka militia groups, this region has been virtually emptied of cattle, with pastoralists taking refuge in Cameroon or in eastern CAR. The latter region was under the control of the Seleka rebels, who are friendlier to the Peul. Large herds thus arrived in southeastern CAR. In the northeastern part of the country along the border with Chad, tensions flared under the combined effect of the northward movement of pastoralists from CAR (seeking to flee the political crisis in their country) and the southward descent of Chadian pastoralists (following poor rainfall).

The security crisis in northern Nigeria has led to the closure of the border with Chad. It therefore affected the cross-border flows of Chadian pastoralists who had to change their routes to reach large Nigerian markets. They have managed by following more secure but longer routes via Cameroon and particularly Niger. To cope with the security risk, some transhumant pastoralists have been forced to settle permanently or semi-permanently south of the Logone plain (Cameroon). These constraints limiting access the largest consumer market in West Africa, and the absence of other commercial outlets, are some of the explanatory factors for the explosion in cattle numbers that currently can be observed in Chad. Insecurity in southern Libya also is affecting traditional camelid trade exchanges.

spread renting of arms to criminals and rebels, which is further increasing demand among pastoralists. To avoid rebellion movements, herders are heading towards remote border areas which are vast, marginalized territories where there is little central government control. In CAR, large herds are thus sometimes escorted by armed herders equipped with modern communication equipment. They move across areas considered to be virtual "gray zones" but which also host certain emblematic protected areas.

1.3.3 The impact of trade and socioeconomic inequality

As for all of Africa, globalization has strongly affected pastoralist communities. As a result, pastoral practices, such as transhumance, have changed substantially over the last 30 years. The development of urban markets and access to basic services, and the improvement of communication technologies, have opened the door to new opportunities. Since the 1990s, the flows of cattle from Chad and northern Cameroon to major urban markets have grown steadily. Herds most often head towards Nigeria.

The prices of animals are generally set according to the terms of trade with agricultural products. Pastoralists have long benefited from relatively stable terms of trade favorable to their activity. Today, speculation, price volatility and the substitution of local products by imported products are causing price instability. Depending on the geographic area, the price relationship between livestock products and agricultural products has even changed to the detriment of pastoralists. Pastoralists must sell more to generate the same amount of income that they earned previously. For some pastoralists, the size of their household's herd is decreasing at the very moment that they should have more animals to ensure the survival of their family units in the medium term.

In both Chad and Cameroon, a gradual transfer of livestock is taking place, from the smallest and poorest pastoralists to the wealthiest ones. Rich transhumant pastoralists benefit from the protection of national economic and political environments thanks to their lucrative activities. Well-connected politically, they even are creating private enclosures on rangelands. On the one hand, for the smallest and poorest pastoralists, this situation further limits their productivity and capacity to increase the size of their herds, and they fall back on areas that are sometimes ill-suited for livestock. They thereby contribute to destroying wild-

life habitats. On the other hand, the overall herd size of wealthy pastoralists developing "entreprenurial" pastoralism is increasing exponentially, involving new practices that do not include the historical, cultural, social and societal features of pastoralism, and which are considered to be the main causes of local conflicts and the destruction of wildlife habitats.

1.3.4 Pastoral areas on the fringes of agricultural development

Despite considerable social, economic and political progress, transhumant pastoralists generally are subject to a certain degree of cultural and spatial isolation. In pastoralist regions, human development indicators remain poor, and the provision of public services is limited. Basic services are largely inaccessible for transhumant pastoralists. The remote conditions of pastoralist regions often justify a low-level of government investment. Furthermore, decision makers promoting territorial development programs have long overlooked transhumant communities. Mobility is often perceived to be an obstacle to the organization of space. Pastoral systems continue to be described as "traditional". The "multi-scale" character of transhumant livestock systems (dispersion of production spaces and marketing spaces) confers on them a reputation of being systems that are difficult to control (Harchies *et al.*, 2007). As a result, public territorial development initiatives rarely consider the dynamics of transhumant pastoralists' use of space (Binot *et al.*, 2006).

A question to consider is whether the agricultural policies for agro-industry development implemented between 1990 and 2000 also had a significant impact on transhumant pastoral systems. Pastoral land used on a seasonal basis was considerably reduced in favor of other, more intensive agricultural uses (dry season sorghum, locally known as berbere, and cotton). Agricultural intensification programs, increased areas under cultivation and improvements in agricultural techniques (for example, irrigation, extension of cotton crops) have sometimes directly influenced the rise in conflicts between farmers and pastoralists.

Traditional pastoral institutions, which are responsible for managing shared use rights and resolving local conflicts, have not always been able to respond to the new challenges. Under these circumstances, they have sometimes lost their legitimacy in the eyes of some pastoralists. The latter have adapted their production practices, in particular their mobility, to take into account changes in agricultural calendars. Nevertheless, transhumance corridors skirting around these agricultural areas are generally heavily frequented and become bottlenecks at the end of the dry season. Certain strategic areas are experiencing increasingly dense concentrations of livestock. This is notably the case around certain protected areas in North Cameroon.

1.3.5 Demographic impact

Pastoralism also is facing other challenges which are much more internal. One in particular is the population growth of pastoralist communities.

Since the middle of the 20th century, the population in the Sahel has more than tripled. Following a similar dynamic, the current population growth in pastoral areas is 2.5 to 3.5% per year. The populations who depend on pastoralism may thus double every 25 to 35 years (African Union, 2010). The impact of this growth will affect the entire Sudanian region in the years to come.

Pastoral societies will be unable to absorb the population overflow in the long term. The number of livestock, even if rising sharply, will not be sufficient to support an excessively large population. Currently, numerous young people from pastoralist households already must leave pastoralism to find other means of emancipation and subsistence. Some take up farming, pick up a trade or join the government if they have a sufficient level of education. They thereby put an end to their mobility. They nonetheless remain culturally linked to pastoralism, and still invest some of their income in the purchase of livestock. They keep the animals near their camps or on the outskirts of the urban centers where they live and work.

The owners in questions do not practice transhumance, but their animals join those of transhumant pastoralists and other agropastoralists on the pasturelands during the dry season. Once their herds have reached a certain size, some owners, who may be businessmen or government bureaucrats, hire young herders to escort their animals to more remote pasturelands. When traveling, these young herders do not always respect the boundaries of transhumance corridors or the management rules governed by and negotiated with local institutions and state authorities. These situations are often at the root of major local conflicts when the animals destroy farmers' fields.

Other young pastoralists are not thriving and are limiting themselves to small holdings. They suffer from a lack of alliances needed to access strategic areas. They are then sometimes obliged to engage in activities such as cutting down trees to produce and sell wood charcoal, etc. Some become poachers or turn to activities involving the illegal collection and use of natural resources. These young people from pastoral communities also have a tendency to join gangs and rebel groups. They help to maintain the climate of insecurity that is now beginning to characterize the outskirts of the most remote protected areas where bandits and rebel groups take refuge. This was notably the case of Faro National Park in Cameroon several years ago. The involvement of young pastoralists in this phenomenon testifies to a complex crisis in pastoral societies, one fueled by intergenerational tensions, a lack of interest on the part of governments in these mobile populations, increasing impoverishment and growing insecurity in pastoral regions.

2. The pastoralism - protected areas interface

Previously fairly contained, the pastoralism - protected area interface is now becoming an urgent problem on the peripheries of protected areas, within buffer zones and over larger expanses of territory such as Greater Zakouma. These peripheries are simultaneously wildlife habitat zones, arable land for farmers and rangeland areas for pastoralists. These overlapping uses are increasing the risk of conflict over access to natural resources between pastoralists and farmers and between pastoralists and conservation officers. Depending on the location, the analysis of the challenges may be different. In some cases, a reduction in livestock numbers may be identified as the priority while in others it may be the control of agricultural dynamics or even directly security issues. However, proposals for action consistently identify the need to integrate transhumant pastoralism into the management of protected areas in order to mitigate local conflicts likely to affect wildlife habitats. This approach also requires an understanding of the challenges which exist at the scale of transhumance territories and regions when cross-border transhumance is involved.

2.1 Each site faces very specific challenges

The challenges of the pastoralism-protected area interface can vary depending on the sites and the areas surrounding them, their ecological features, geographic location, neighboring communities, political and socioeconomic organization, type of pastoralism practiced, etc. However, in most cases, they reflect conflictual relationships between pastoralists, farmers and conservation officers around questions of access to resources, wildlife habitat degradation and poaching.

To cope with these situations, most recommended measures seek to closely integrate biodiversity conservation and local development in the peripheries of protected areas, especially since these outlying areas are characterized by the extreme poverty of the people living in them.

The cases of Waza National Park, the Greater Zakouma ecosystem and the Bili-Uere - Garamba - Chinko landscape present diverse problems and proposed solutions.

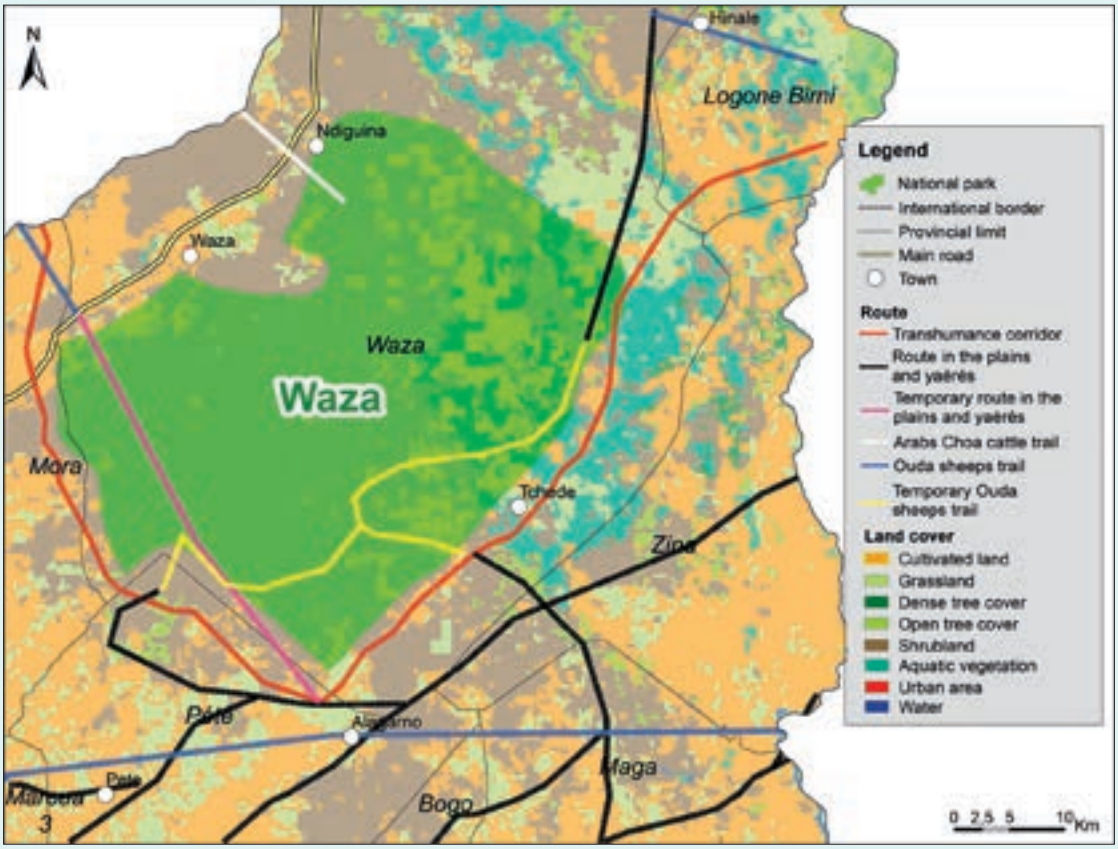
Waza National Park (Cameroon): immense concentrations of livestock

The Far North region of Cameroon is a genuine crossroads of trade routes and cultures. Pastoralists, their herds and wildlife have peacefully coexisted for a long time on the pastureland of the Waza-Logone flood plain. Each year, transhumant pastoralists move in with their herds for the dry season, maintaining strong social and economic ties with local communities. Some pastoralists gradually have established their families and part of their herds on former grazing areas that were attributed to them by traditional local authorities. These families started to grow a few crops. The areas reserved exclusively for herds were then reduced considerably.
Against this backdrop of land pressure, traditional authorities today appear to be calling into question the rules regulating access to grazing land. Pastoralists are being forced to renegotiate the sites that they sometimes have used for several generations. To avoid being dispossessed, land-use must be permanently visible in a landscape. Consequently, pastoralists who have become agropastoralists tend to extend their cultivated areas at the expense of pasture land, thereby affirming their rights over the land (Kossoumna Liba'A, 2018). Livestock are then pushed back and concentrated on the few savannas remaining available. The increase in livestock on these areas leads to over-grazing and bush fires. Conflicts with local communities, farmers, sedentary pastoralists, transhumant pastoralists and wildlife now occur on a daily basis over access to water points and increasingly scarce grazing land.

Waza National Park (Cameroon): immense concentrations of livestock

Figure 5 indicates the presence of transhumance routes along the edges and even inside Waza National Park.

Figure 5 – Pastoral routes around Waza National Park



From January to July, the massive arrival of herds from the north poses a heightened threat to the ecosystem. During this period, over 100,000 heads of cattle may be found on the Waza-Logone flood plain alone. The movements in question increase the risk of over-grazing, land compaction and soil degradation. The livestock carrying capacity is often more than surpassed. It hovers around 17.5 Tropical Livestock Units (TLU) per hectare (Jiagho, 2018). At the end of the 1990s, it was estimated to be between 8 and 10 TLU per hectare (UICN & CBLT, 2007).

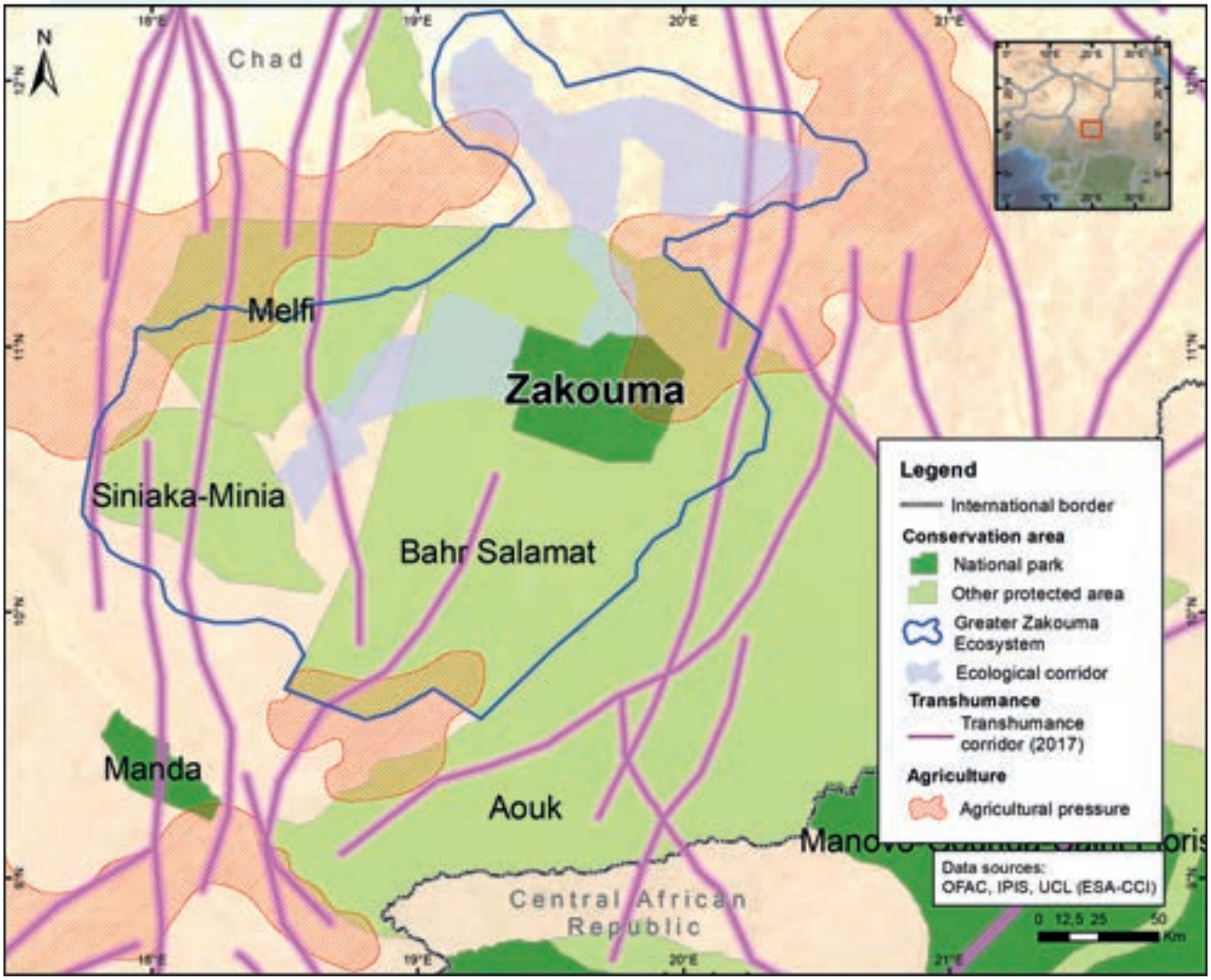
Furthermore, pastoralists and their herds are increasingly extending their stay past July when the first rains are slow to fall. Pastoralists can establish themselves for periods lasting over six months, notably to the east of Waza National Park, a flood-prone area where there are perennial ponds. Many pastoralists establish themselves in an even more permanent manner.

For their part, local agropastoralists are intensifying their investments in livestock. They are mostly goat farmers, and supplement their animals' feed with woody forage. This sometimes leads to the uncontrolled cutting of the woody resource. It is estimated that 478 ha of forest cover is disappearing on average each year from the areas surrounding Waza National Park (Jiagho *et al.*, 2016). The natural habitat is thus being modified in an alarming manner. Wildlife are being affected and conflicts are deepening between conservation services and transhumant pastoralists. This state of affairs is disturbing wildlife conservation actions in Waza National Park.

Greater Zakouma (Chad): strong expansion of the agriculture sector

The Greater Zakouma Functional Ecosystem (Figure 6) spans approximately 25,000 km². It includes wildlife habitat areas, some of which are classed as protected areas, and others which are occupied by sedentary and mobile human communities. Due to the multiplicity of actors involved and the shared uses of resources, cohabitation between farmers, pastoralists and wildlife is a constant challenge. The region is notably characterized by very strong dynamics between corridors allowing the movement of wildlife, mainly elephants and large antelopes, the agriculture colonization front and the pastoralists' transhumance routes. These different ways of using the land frequently overlap in both space and time. Areas of vegetation stretch out on both sides of the park's boundaries. These areas allow wildlife to pursue their seasonal migrations outside the park. During the rainy season, elephants are found to the north and southeast of the park. In recent years, the management of the national park has improved significantly. Numerous large mammals have returned. In the areas surrounding

Figure 6 – Agricultural colonization and transhumance routes across the entire Greater Zakouma Functional Ecosystem



the park, this dynamic is beginning to generate conflicts with local communities. Damage to farmers' crops and carnivore attacks on domestic livestock are increasing. They are causing a certain degree of antagonism between park officials and farming communities, who may seek reprisal through poaching.

The Zakouma area serves as a bread basket for Chad due to its cereal production, which is among the highest in the country (notably that of dry season sorghum, locally known as *berbéré*). The expansion of *berbéré* crops is the major cause of deforestation in the areas around the park and is the main threat to wildlife conservation. Once used to graze animals and gather food, the savannas are now deforested. In the areas where vegetation still appears "intact", diverse landscape markers signal the limits of fallow land that are recognized by everyone and are socially appropriate. These areas with fluctuating boundaries and land rights that are well-established at the village level are subject to ongoing local renegotiations (Binot, 2011).

The area hosts transhumant pastoralists who descend from the north each year at the end of the rainy season (October-November). They establish themselves in the plains neighboring the park with their tens of thousands of cattle. Some of these pastoralists only stay a few days before resuming their journey in CAR, sometimes travelling all the way down to southeastern CAR. Pastoralists practicing medium-distance transhumance stay for the duration of the dry season. Their herds make the most of the end of the *berbéré* harvest. Some pastoralist families establish themselves more permanently and engage in small-scale farming. Sedentary farmers also are investing in livestock to diversify their income. There has been a significant growth in cattle livestock, and agro-sylvi-pastoral farming systems are increasing in number. There is heavy pressure around the transhumance corridors when thousands of heads of cattle throng together in the peripheral area. Animal movements are becoming more complicated. The transhumance corridors are reduced and sometimes completely obstructed by crops while access to important areas of mixed uses is very difficult due to the extension of farming activities.

The advance of the agriculture front on the savannas and the pastoralism area constituted by transhumance corridors, and the growth in livestock numbers stemming from transhumant pastoralists settling in more permanently and from investments in livestock by farming inhabitants, are the main causes of the degradation of wildlife resources. These dynamics are behind the increase in conflicts between pastoralists and farmers, between pastoralists themselves, and more generally between people and wildlife (destruction of crops by pests and attacks on livestock by wild animals, slaughter of animals for trade).

Numerous studies have been conducted in Zakouma National Park to better understand the dynamics at play, the diversity of stakeholders, their respective strategies, and the short and medium-term issues (political, food, economic, energy, sociocultural) involving natural resources. This has led to the development of a landscape approach to address questions regarding conservation, farming and livestock. This involves shifting to an approach seeking to integrate the park and its vital ranges for large wildlife into the development of surrounding territories through the application of an inclusive land-use plan. In particular, the establishment of the Greater Zakouma Functional Ecosystem should enable conservation efforts to be expanded by integrating the role of local communities.

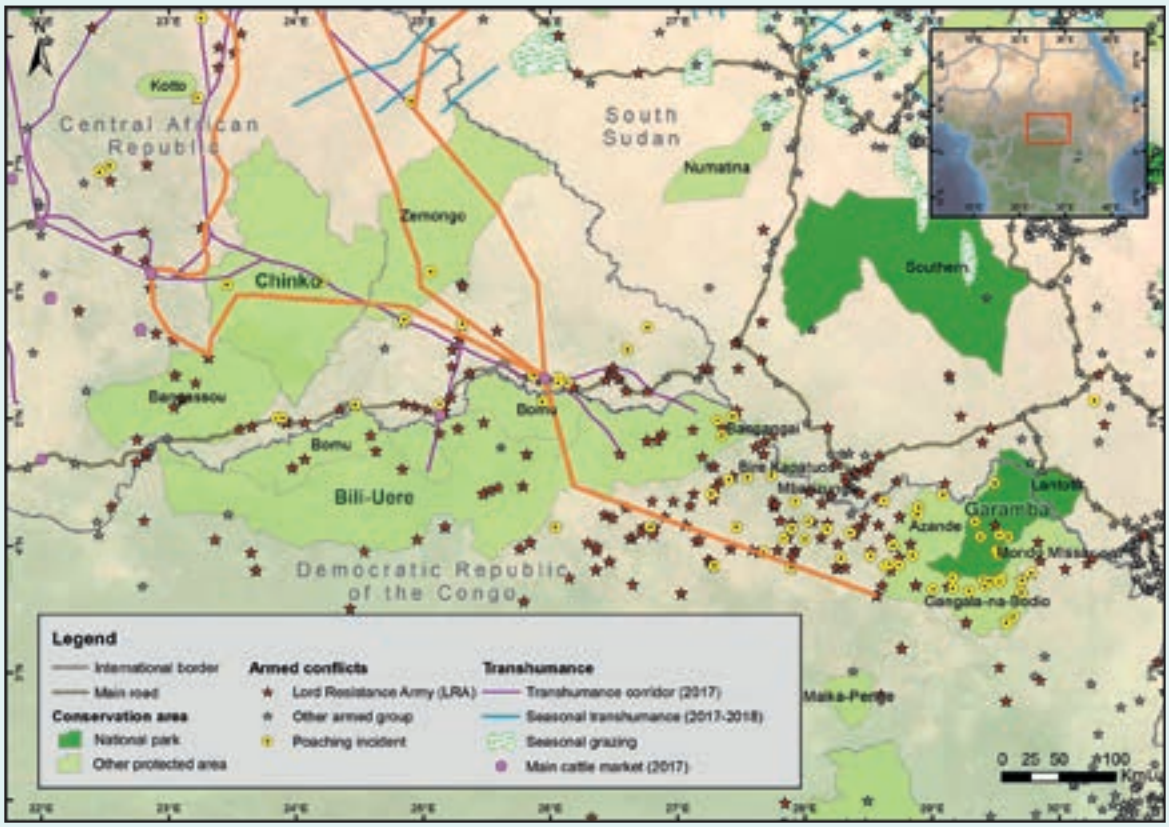
Bili-Uere – Garamba – Chinko landscape (DRC and CAR): the insecurity in question

This landscape includes the Garamba complexes (Garamba National Park and three game reserves: the Bili-Uere hunting estate and the Bomu reserves in DRC, and the Chinko reserve in CAR). This isolated and sparsely populated region (2.9 habitants/km^2) straddles the border between DRC and CAR and lies close to South Sudan (Figure 7). It is populated by farming communities and transhumant pastoralists. Neither government has controlled the territory for the past 20 years, and the virtual absence of public services has facilitated the establishment of several armed groups like the Lord's Resistance Army (LRA). These well-equipped groups actively engage in large-scale poaching (Ondoua *et al.*, 2017).

Several groups of transhumant pastoralists move through the region on a seasonal basis: Arabs (from Chad and Sudan) and Peul (Fulani and Bororo, divided into several clans which are more or less independent from each other). The latter are from regions lying along both sides of the CAR-Cameroon border. They began their slow migration towards eastern CAR in the 1920s. Their movements accelerated in the direction of DRC in the early 2000s due to diverse factors, including a series of droughts, repressive political events, shifting fronts of insecurity following civil wars in DRC and Sudan, and economic opportunities that sometimes opened up around protected areas and refugee camps.

In DRC, local farming communities accuse these transhumant pastoralists of collaborating with armed groups and major poachers, sharing information and food with them. In fact, large

Figure 7 – Conservation, insecurity, and cross-border transhumance: challenges of the cross-border area between CAR, DRC and South Sudan



Bili-Uere - Garamba - Chinko landscape (DRC and CAR): the insecurity in question

poachers frequently use the paths and tracks followed by transhumant herds. By doing so, they can consistently avoid densely populated areas and centres. To cope with the threat of insecurity, transhumant pastoralists are sometimes pushed to arm themselves. This state of affairs leads local populations to identify the pastoralists with the rebels and large poachers.

In CAR, the transhumant pastoralists arrive each year from the northeast and settle down in the Chinko area from December to May. These pastoralists are armed to protect their animals from rebel groups circulating along their route. Most are shepherds employed by rich elites living in Darfur. While the cohabitation with the Chinko reserve may appear to be more peaceful than in DRC, it is sometimes difficult to distinguish the pastoralists from large poachers and rebel groups. This confusion can again accentuate the climate of fear and insecurity among local communities.

The passage of herds near the protected areas raises several problems for the managers of these spaces. The herds threaten natural wildlife habitats and the pastoralists sometimes hunt intensively when passing through.

Under the effect of climate change and growing insecurity in DRC and CAR, the movements of transhumant pastoralists are going to intensify in these isolated regions where the governments exercise little territorial control. Existing laws have been poorly adapted to the situation for a very long time. They appear totally inadequate for regulating the passage of herds on both sides of the borders. The transhumant pastoralists are both victims and perpetrators of insecurity. Investments to secure the transhumance routes, notably the water points and improved market access, appear today as the best solution. The objective is to reduce conflicts between communities and establish a sustainable use of resources in keeping with conservation goals.

2.2 Integrating transhumant pastoralism into the management of protected area peripheries

2.2.1. Promote the landscape approach for the integrated management of protected areas

Protected area integration can be defined as: "the process of ensuring that the design and management of protected areas, corridors and the surrounding matrix fosters a connected, functional ecological network." It also may be defined as the integration of the values, impacts and dependencies of the biodiversity and ecosystem functions and services provided by protected areas into key sectors, such as agriculture, fisheries, forestry, mining, energy, tourism, transportation, education and health (CBD, 2018). The integration of protected areas and conservation areas into landscapes is thus an essential factor for the sustainability and effectiveness of conservation measures fostering connectivity. Land users should be included in the establishment and management of protected areas, and new types of protected areas and conservation areas should be developed that allow an occupation and use of land that are in line with conservation objectives. The establishment of protected areas which integrate the human communities residing in the peripheries of protected areas and stricter conservation areas (such as national parks) would help improve connectivity by creating transition zones between protected areas and the rest of the matrix, which would promote integration into the landscape. Initiatives related to connectivity must take into consideration the conservation of private lands to be successful at the landscape scale. Incentive measures could be implemented to facilitate community cooperation aimed at maintaining particular assets in the transition areas. For example, payment strategies for ecological services (carbon sinks, minimum payment for water filtration, water containment, etc.) could be proposed to cover the

expected costs of services and to reinforce integration by recognizing the value obtained.

Community mobilization and participation in conservation planning are essential for the integration of protected areas and conservation areas into the landscape. To strengthen residents' sense of belonging and their willingness to play an active role in achieving conservation objectives, a charter could be drawn up in collaboration with all stakeholders who may voluntarily adhere to the charter, which would confirm their commitment for a fixed period, with the option to renew their participation. This would attest to the communities' intention to carry out land projects, including a vision for territory development planning and conservation. Provincial laws on protected areas and territorial development planning could govern these charters.

2.2.2 Promote land-use plans which take into account the spatial logic specific to transhumance

On the same territory around a protected area, several types of transhumance may be interacting. Each type of transhumance can have a different relationship with space and time. Depending on their production practices, long-distance transhumant pastoralists, agropastoralists and neo-pastoralists (whose herds are managed by hired shepherds) each have different interests. The same holds true for the other actors in a territory, such as protected area and wildlife managers, farmers, mine operators, administrative staff, etc.

This overlapping between transhumant pastoralists' mobility and other users' relationship with space, coupled with security issues, represents a source of conflict. Designing an approach that takes into account all types of mobility and the uses of all stakeholders also is essential for setting up the peaceful management of transhumance around protected areas.

In this regard, land-use plans are interesting tools. This is particularly true because their development follows a process that is meant to be inclusive in order to account for the complexity of power games between stakeholders. The approach should highlight:

- The **diversity** of actors, the absence or weak involvement of certain stakeholders, their spatial logics, their relationships with the land, and the allocation of land and its uses.
- Seasonal **mobility**, which is a key component to the local dynamics of natural resource use.
- The **interdependence** of actors and of crop production systems and transhumant livestock systems. The two systems follow different spatial logics in terms of rights of access to resources, but their practices are complementary. They are the result of negotiations guided by well-established sociopolitical mechanisms. The pastoral and crop farming communities can be ethnically distinct but are generally economically complementary and socially integrated (Huchon, 2018).

Beyond enabling a wealth of information to be collected about local territories, the process of

developing a land-use plan helps to strengthen the resilience of rural communities. This is a critical element for avoiding human-animal conflicts. The delineation and recognition of specific spaces thus aim to secure resources (wildlife and rangeland) as much as the legitimacy of actors (seasonal transhumant pastoralists, for example) as "rightful claimants" to the space, particularly in contexts with strong land pressure (Binot *et al.*, 2006). This is why it is important to ensure that:

- The plans address the two spatial logics (securing resources and actors' legitimacy), without which the local complementarities between crop farming and pastoralism risk being destabilized.
- Transhumant pastoralists and farmers are considered in the same way and are involved in the development of these plans, although it is always more difficult to involve the former as their presence is seasonal and their legitimate institutions are not always represented locally on the sites (because they often reside in the territories where they spend the rainy season).
- Plans are the subject of discussion at the local and regional level (of transhumance routes) because mobility is organized at the scale of a transhumance route.
- Discussions do not only involve "artificial" groups, formed solely for the needs of a project. The consideration of conflicts of interest related to land management may initially prove to be problematic. Nonetheless, it makes it possible to include certain customary authorities whose views otherwise could subsequently become sources of roadblocks or conflict.
- Efforts are made to move beyond the stage of the simple participation of local populations, and in particular of transhumant populations. The roles and responsibilities of each must be defined and actors in the system of governance also should be involved.

One should keep in mind that these land-use plans must above all be negotiation tools that can evolve. In particular, they can make it possible to prioritize investments and infrastructure and to set objectives for these multi-user spaces. Above all, they offer a broader picture of local development, transhumance corridors and ecological corridors, water points (location, type of structures, ponds or boreholes) and their functionality according to the types of users, forage production sites (type of forage according to users), checkpoints for veterinary services and security, etc. At a later stage, the construction of new infrastructure for pastoral purposes (pastoral stations, ponds, corridors, cattle markets, vaccination yards and mixed health care supplies, etc.) enables the dialogue to be continued with all of the stakeholders and to orient transhumance routes on a given territory.

Depending on the case, these plans can potentially establish a consensual demarcation of the boundaries of protected areas that all actors understand. The process of defining these then can facilitate the effectiveness of surveillance measures, strengthen the capacities of wildlife managers in terms of information, logistics and the use of technological tools, and allow them to adapt to emerging threats.

2.2.3 Think on the scale of transhumance routes

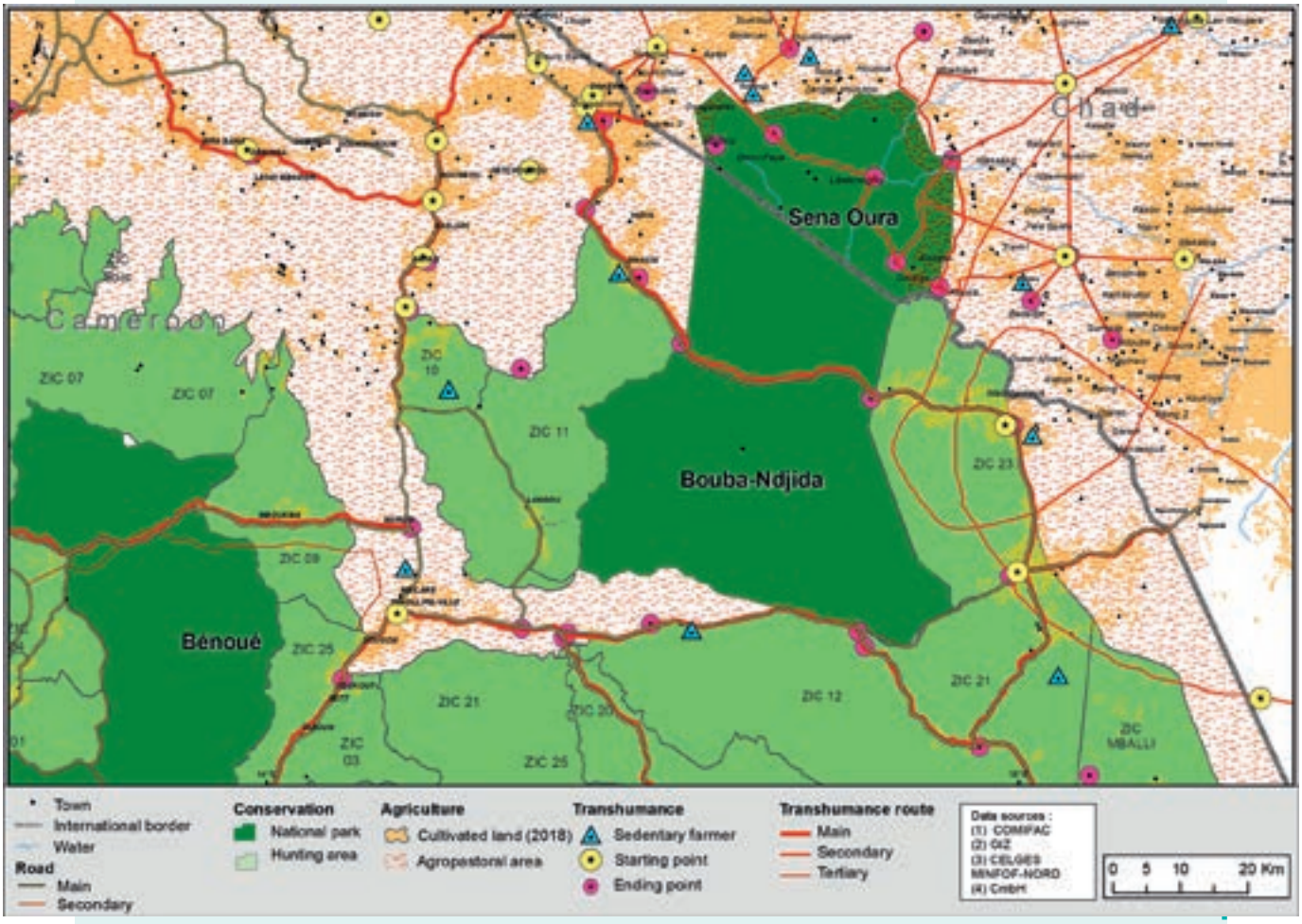
To better grasp the complexity of interactions between a protected area and transhumance, it is important to understand the specific functioning of the different livestock farming systems operating on the outskirts of the protected area concerned. The analysis of the spatial dimensions of transhumance is an essential prerequisite for establishing a constructive dialogue between the managers of protected areas and pastoralists, which then makes it possible to precisely identify the determinants of pastoralists' actions and the role of the protected area and its periphery in their lives.

To do so, it is vital to consider several interlocking levels. The first level covers the set of routes that lead to the protected area in question, from the pastoralists' departure point to the dry season pastures targeted (Figure 3). The second level designates the stages of the transhumance route, before and after the protected area (departure point, rapid travel area without permanent water points, transit area and arrival area, depending on the position of the protected area along the route). Lastly, the local level is that of the area directly around the protected area, with its pastures and water points, that hosts transhumant pastoralists who are passing through or stay there.

The binational Sena-Oura - Bouba-Ndjida (BSB) Yamoussa complex: better understanding transhumance to target management priorities.

The BSB Yamoussa complex, established in August 2011 through a partnership agreement between Chad and Cameroon, is an ecological ensemble composed of two key protected areas (figure 8): (i) Sena-Oura National Park in Chad and Bouba-Ndjida National Park in Cameroon. The BSB Yamoussa complex is surrounded by several zones of hunting interest (referred to below by their French acronym, ZIC) in Cameroon and a peripheral area in Chad. These two protected areas are under multiple and intensifying external pressures generating agro-sylvo-pastoral conflicts linked to an intensification of migration, the gradual encroachment of agropastoral activities, the development of mining activities (uncontrolled gold mining), conflictual management of transhumance and an escalation of poaching. The rapid advance of the agricultural front in particular is increasing the difficulties involved in moving transhumant herds and is heightening the risk of multi-faceted land conflicts. The vast majority of BSB is covered by infertile land unsuitable for agriculture. At the end of the dry season, water becomes scarce. The rivers, called locally *mayo*, are dried out and pastures are degraded. Access to water, even more than pastures, is the major problem for both livestock and wildlife.

Figure 8 – Transhumance and land occupation in BSB Yamoussa area



The binational Sena-Oura - Bouba-Ndjida (BSB) Yamoussa complex

Since 2014, several studies undertaken under the framework to resolve the issue of transhumance in Cameroon (North and Far North) made it possible to identify the spatial, social, economic, technical and political dimensions of transhumance in the area.

Exclusively nomadic Peuls form a very small minority. Most transhumant pastoralists make seasonal movements without crossing borders. Most are crop-livestock farmers or agropastoralists. The herds, with 40 to 60 heads, are shepherded by herdsmen from the Garoua area in the north. Cross-border seasonal transhumance between Chad, Cameroon and Nigeria also exists, most often practiced by young hired herdsmen. Herds moving from Chad towards Cameroon are larger than those coming from Nigeria, or those which are from Cameroon and moving towards Chad. In principle, everyone knows the major transhumance corridors defined by a decree from the ministry in charge of livestock. Small and medium transhumance corridors are determined by more local and customary practices. Transhumant pastoralists complain that crop fields are spilling over onto these corridors.

These preparatory studies made it possible to now build elements for a consultation process involving the different actors, reconcile points of view, and guide future interventions in the cross-border context of the BSB Yamoussa complex on the basis of a genuine involvement of local communities. It turns out that the local populations recognize the importance of protected areas, particularly their capacity to slow down the development of the agricultural front. They nonetheless are advocating for an increase in land allocated to crop and livestock farming. In other words, they accept the parks, but are less tolerant of the ZIC surrounding the parks. The issue of ZICs will therefore be a priority for support action in the park peripheries.

Setting up a mechanism to prevent and manage conflicts related to transhumance should enable the establishment of constructive dialogue and positive relationships between the managers of the protected areas and the users of the BSB space, and ensure the sustainable use of goods and services provided by the natural environments.

This step of understanding the route in its entirety makes it possible to assess the strategies of different types of transhumant pastoralists. It enables an understanding of how pastoralists consider the periphery of a protected area within the broader context of the entire route: an essential area after a rapid movement with the herds, a transit area, a final destination, etc. Depending on the position of the protected area on the transhumance routes, management issues may be different as the animals' needs and the pastoralists' objectives will not necessary be the same. The measures to implement at the local level by the manager of the protected area could then be different depending on the situation.

2.2.4 Consider the role of transhumant pastoralists in the management of insecurity

Overall, transhumant pastoralism helps to make the most of vast remote areas, ensuring a human presence in isolated regions within countries facing major security challenges (OCDE, 2014). It is an essential line of defense against insecurity by the occupation of the space. The relationship between herd mobility and security can, however, work both ways (COMIFAC & GIZ, 2019). Pastoralists often are the first victims of rebel groups and bandits involved in large-scale poaching. Pastoralists try to avoid confrontations with these groups, but they can also be led to support poachers' operations, directly or indirectly, by hiding arms or providing information.

Under these conditions, the managers of protected areas have every reason to maintain constructive relationships with transhumant pastoralists, who can prove to be valuable sources of information about large-scale poaching networks. Depending on the context, this can be undertaken in different ways, one example being the development of basic services for transhumant pastoralists in the peripheries of protected areas.

Managers of protected areas must position themselves at the heart of development and security issues as territory actors alongside other sociopolitical actors. Defending the benefits of transhumant pastoralism to state authorities and local political leaders could then be a means to gain the confidence of pastoralist community leaders, develop constructive relations with pastoralists and ensure their support in the fight against large-scale poaching.

2.2.5 Maps and trade networks

All too frequently, maps made for the management of protected areas focus strictly on the management of parks and their peripheries. However, the problems of large-scale poaching and transhumance cannot be resolved solely at the local scale or only within the boundaries of a protected area. Significant efforts thus must be made to establish maps which integrate protected areas and other types of land use, including transhumance territories on the scale of transhumant routes. Used for decades, major transhumance routes often are part of the landscape and are widely recognizable. On the most problematic sites, several projects also have delineated the boundaries of the main corridors where animals pass through. The tracks are sometimes approved by government administrations, and may even be marked. This work already has been launched in Chad (Almy Bahaim project) and in West Africa.

Regional observation and information mechanisms also should be developed on issues common to biodiversity conservation and transhumance management. The development of exchange networks between managers of protected areas affected by transhumance and security and pastoral development actors could be a good way to break down barriers separating themes. Such networks also could be used to supply statistical databases useful for the overall management of interfaces between transhumance territories and protected areas and/or their peripheral areas, mark the most problematic routes, and define guidelines for the review of legislation on abandoned or overcrowded transhumance routes, or on parks that exist only on paper.

2.2.6 Support customary institutions and local diplomacy initiatives

The traditional institutions managing herd movements are facing significant structural constraints. For example, their ability to respond to the challenges of climate change and insecurity is generally limited. As a result, they are losing some of their legitimacy, and many pastoralists and new herd owners are turning their backs on their authority. Yet support for these traditional institutions and other suitable consultation frameworks is essential for understanding and implementing agreements and alliances involving

the shared and sensible use of natural resources. Support given to these institutions by the managers of protected areas encourages local diplomacy and promotes inclusive agreements.

For example, in the context of Faro National Park in Cameroon, these initiatives have facilitated the establishment of agreements on mobility and the assessment of the carrying capacity on the busiest grazing areas, and influenced the perception of the stakeholders concerned. Support for the Network of Transhumant Associations of Greater Faro, led by the *Lamido* of Tchamba (a traditional Peul chief), is enabling diverse actors to discuss and negotiate different questions related to the management of pastoral mobility around the national park. On both sides of the border between Cameroon and Nigeria, all those directly concerned were already linked traditionally, but alliance systems were losing their legitimacy. With the *Lamido's* support, this network made it possible to rekindle interest across transhumant communities as a whole, and to include other issues in local debates, such as combating insecurity (the park had become a refuge for hostage takers and highway bandits) and the protection of natural resources.

Traditional institutions also can be strengthened by becoming integrated into broader collaboration platforms. The Actors Forum from Faro is another example of a multi-stakeholder and multi-sectoral platform. It brings together all of the parties involved in the management of the territories surrounding Faro National Park, the *Lamido* and local authorities, as well as the army, security and law enforcement forces, park managers and the private sector active in the greater Faro area. Here, transhumant pastoralists and other actors have come together in the interest of conservation. They identify together solutions to problems arising from the shared use of resources and space. These consultation frameworks help actors to reach agreements and align their interests, and consider the mobility and the territorialization of transhumance in a peaceful manner by including the interests of the management of protected areas and their peripheries.

Within these consultation frameworks, the role of each participant is based on local sociopolitical relationships specific to each society, whether the society be highly or loosely structured. The circumstances and the manner by which actors interact are not the same from one site to another, in the *Lamidat* of Tchamba (Faro) or isolated areas of CAR and DRC. Each site has its own dynamics, with its own actors' logics and inter and intra-actor relationships on the peripheries of protected areas. Given the new challenges, population pressure and pace of pastoralist communities' generational renewal, the adaptability of traditional institutions should be analyzed. These institutions must be able to respond to the aspirations of new generations of pastoralists in terms of governance, services and representation. They must be able to base their legitimacy on notably new management skills, and on their ability to engage in dialogue with government authorities (Huchon, 2018).

Finally, particular attention must be paid to eventual political and economic interference from figures with close connections to central or local government authorities. Impunity and weak local governance can quickly wipe out any results achieved by actors on the ground. Lobbying at the central level for the fair enforcement of laws must be carried out in parallel to work in the field.

2.2.7 Facilitate the integration of agropastoralists and younger generations

It was mentioned earlier that in response to drought and insecurity, many pastoralists have left their home regions and settled in other areas that are more favorable for their livestock. Although they sometimes have been settled for dozens of years on these new territories, their integration into local communities often remains tenuous. There may be a great deal of tension on certain sites long after these former transhumant pastoralists have settled down on them. Dealt with in terms of identity, or even instrumentalized by a few political leaders in national debates strongly marked by ethnicity, these tensions can give rise to violent clashes, as can be observed in Nigeria and East Africa.

In the interest of pacification, special attention must therefore be paid to the integration of transhumant populations into host communities. This is a point raised regularly by pastoral development projects. Social programs implemented on the outskirts of protected areas should pay keen attention to this integration, notably through non-discriminatory access to health and education services, the promotion of inter-community social events, etc.

The implementation of support programs (for example, education, literacy, and professional training) targeting young people from pastoralist communities in particular can make it possible to work on long-term trends. Integrating young pastoralists into conservation programs also can be an opportunity because their knowledge of the environment can contribute considerably to conservation efforts.

2.2.8 Support cross-border agreements

Several bilateral initiatives and agreements relating to the creation and concerted management of cross-border complexes of protected areas already exist in Central Africa. These include the 2011 cross-border collaboration agreement between Cameroon and Chad for the Bouba-Ndjida (in Cameroon) - Sena-Oura (in Chad) complex, reinforced by a tri-national agreement between Cameroon, Chad and CAR in 2013. The subregion also has a plan of extreme urgency to fight poaching and an emergency plan to fight poaching (savannas component).

Despite these integrative processes initiated by regional institutions such as CEEAC, COMIFAC (Central African Forests Commission) and RAPAC

(Network of Central African Protected Areas), policies and strategies are not being concretely applied in the field. This is mainly the result of institutional factors and a lack of land-use plans. The "protected areas - transhumance" issue finds itself at the crossroads of the prerogatives of several ministries. It is difficult to activate synergies without major collective decisions and above all without a shared objective.

The 2019 N'Djamena conference made it possible to put these issues on the regional political agenda. However, discussions were very focused on issues of security, control and the creation of corridors and cross-border protected area complexes for wildlife protection. The N'Djamena initiative needs to be strengthened and the debate broadened by integrating the territorial logics of transhumant pastoralists more deeply into the discussions. The task is to link local territories, encompassing protected areas and their peripheries, to the territories experienced by transhumant pastoralists. Beyond intergovernmental agreements, innovation also must take place through the implementation of collaborative approaches at the scale of transhumance routes.

In the short term, this involves supporting cross-border dialogue initiatives to define a regional and integrated vision of transhumance-protected area interfaces in Central Africa. This step is a prerequisite for the regulation of cross-border transhumance and the establishment of frameworks for concerted action to capitalize on past transhumance movements, prepare for future ones, and make an inventory of the investment needs for improving relations between these two forms of occupation of space.

Conclusion: current lessons and future prospects

The treatment of transhumant pastoralism in the peripheries of protected areas is today a core concern of protected area managers in the Sudano-Sahelian region. The actions taken by managers in this domain undoubtedly remain too limited. Human factors (cultural, historical, social and societal, economic) in particular should be better integrated into their vision of pastoralism and territorial development. However, it should be remembered that, contrary to what can be seen in East Africa, logistical issues also often continue to severely limit, from a technical and financial point of view, the development of effective actions in favor of pastoralists making use of remote and sparsely populated areas.

Compared to what is happening in East and West Africa, knowledge about transhumance in Central Africa remains weak with regard to recent transformations and future challenges. Considerable efforts are still needed to better understand the evolution of the spatial, ecological and socioeconomic dynamics specific to pastoralism in the region, notably in response to climate change and insecurity which are affecting large portions of the territories that transhumant pastoralists travel through. These efforts are without doubt a prerequisite for any large-scale operation to address the issue of protected area peripheries. The task is to focus on better understanding the internal power relations specific to pastoralist groups whose social systems, despite appearances, are often highly structured. Socio-political studies on transhumant groups should serve as a lever to integrate transhumant pastoralists into political consultation processes and to improve the effectiveness of the interventions of protected area managers. Political questions must be considered to tackle the phenomena of increasing conflicts, instrumentalization and the rise of jihadism in particular.

Finally, special attention could be given to lessons learned from the creation of protected areas in the Sahelian zone, such as those of the Ouadi Rime-Ouadi Achim and Binder-Lere reserves in Chad. The socioeconomic issues of pastoralism and the ecological concerns of conservation are closely linked. Here, support for the pastoral economy is a means to guarantee the safeguarding of the exceptional ecological characteristics of these wildlife sanctuaries. Improved cohabitation between wildlife and transhumant pastoralism on the outskirts of protected areas could be achieved by safeguarding the mobility of transhuman pastoralists across their entire transhumance routes.

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