



ECOWAS COMMISSION
COMMISSION DE LA CEDEAO
COMISSÃO DA CEDEAO

April 2022

What evolution scenarios for mobile livestock systems by 2040?

Synthesis note on the prospects of livestock in West Africa



This study was carried out within the framework of the implementation of the ECOWAS agricultural policy, ECOWAP, and more specifically of the 'Integrated and Secure Livestock and Pastoralism in West Africa Project' (PEPISAO), implemented by the ECOWAS Commission through its Directorate of Agriculture and Rural Development (DARD), and whose components 1 and 2 have been delegated to the CILSS Executive Secretariat.

This publication was produced with the financial support of the French Development Agency (AFD) and the technical support of CILSS and the IRAM-ISSALA-LARES grouping.



Grouping
IRAM
ISSALA
LARES

This report is published under the sole responsibility of ECOWAS' Directorate of Agriculture and Rural Development and does not necessarily reflect the views of AFD and the ECOWAS and CILSS Member States.

For more information, please contact:

ECOWAS COMMISSION

Department of Economic Affairs and Agriculture
Directorate of Agriculture and Rural Development
River Plaza Annex - 496 Abogo Largema Street - Central Business District
PMB 401 Abuja FCT - Federal Republic of Nigeria

[✉ agric_ruraldev@ecowas.int](mailto:agric_ruraldev@ecowas.int)

[🌐 www.ecowap.ecowas.int](http://www.ecowap.ecowas.int)

[f ecowas.agriculture](https://www.facebook.com/ecowas.agriculture)

[t ecowas_agric](https://twitter.com/ecowas_agric)

To cite this document :

ECOWAS Commission. What evolution scenarios for mobile livestock systems by 2040? Synthesis note on the prospects of livestock in West Africa. 2022

Photo credit: <https://fr.freepik.com/photos/animal> created by wirestock - en

Copying, downloading or printing the contents of this document for personal use is permitted. Extracts from this document may be included in documents, presentations, blogs, websites and educational materials, provided that the source and copyright are acknowledged. Any requests for public or commercial use or for translation rights should be addressed to ECOWAS.

© ECOWAS 2023

Table of Contents

TABLE OF CONTENTS.....	3
FOREWORD.....	4
EXECUTIVE SUMMARY	5
INTRODUCTION	7
Building a regional vision on the future of mobile livestock systems.....	7
Mobile Livestock Systems and West African Societies	8
Mobility in West African societies: actors, territories and policies	16
1. THE VARIABLES OF CHANGE: TRENDS AND UNCERTAINTIES TO CONSIDER.....	20
1.1 Socio-economic dimensions	20
1.2 Environment and climate change.....	21
1.3 Territories, institutions and public policies	22
2. THE ENVISAGED SCENARIOS	27
2.1 Trend scenario - Pastoralism under tension in a conflictual environment.....	27
2.2 Scenario of rupture - Abolition of transhumance and a retreat of livestock policies to the national space.....	30
2.3 Accompanied scenario - Towards an integrated regional livestock system	32
3 A DISCUSSION OF THE SCENARIOS	38
3.1 Strengths, limitations and sustainability of the three scenarios.....	38
3.2 Consensus and divergence around the scenarios	41
3.3 The conditions for promoting an integrated regional scenario	42
CONCLUSION: LIVESTOCK MOBILITY, A REGIONAL COMMON GOOD	44
A possible compromise for regional integration?.....	44
Building an integrated perspective on common ground	45
LIST OF ACRONYMS	46
LIST OF ILLUSTRATIONS	47
BIBLIOGRAPHY	48
Preliminary work led by Pepisao.....	48
Prospects for livestock and pastoralism in West Africa.....	48
Other documents and information sources.....	48

Foreword

Livestock is a strategic sector in West Africa and the Sahel, both in terms of the size of its livestock population and production, as well as in terms of the importance in the livelihoods and food security of millions of households. Historically, ruminant husbandry systems are characteristic of the economies and management of the vast arid Sahelian spaces and they form a central element of the culture of the families of pastoralists, sedentary livestock breeders and sedentary agro-livestock breeders. But livestock farming is above all an illustration of the potential offered by the valorisation of the region's agro-ecological complementarities, which makes it the first vector for the integration of economies and territories through a system of complex exchanges. This system, which makes it possible to cope with the variability of natural resources, organizes synergies between agricultural production systems and livestock systems, is a vector of links and dialogue between communities. Finally, it helps to supply the animal protein deficit markets of the coastal countries.

The rapid and major changes facing the region (demography, urbanization, insecurity, climate change, etc.) call into question these historical trajectories which have largely founded the regional integration of West African spaces, economies and peoples.

The exacerbation of competition for access to natural resources (grazing, water and land) and the resulting mediatised conflicts are leading countries to rethink their approaches and very often to adopt positions of withdrawal into the national space.

ECOWAS has been involved in the promotion of livestock farming and the management of cross-border transhumance for over 25 years. Clearly, the principles adopted at the end of the last century by the regional community must be reformed in the light of current and emerging changes, and above all the ambitions that the region has set for itself through the States and all socio-professional actors to think about the future of a sector with multiple economic, social, cultural and environmental dimensions.

This is why the ECOWAS Commission has undertaken a prospective study to help stakeholders and decision-makers. This work is

based on a synthesis of knowledge and the design of three scenarios with the identification of their probable impacts by 2040. The first is based on a projection of the main historical and current trends; the second is characterised by an increase in the power of national logics; and finally, the third attempts to outline an anticipated and accompanied transformation of the sector in the region, and particularly of livestock systems that include mobility as an element of securing, of competitiveness and of adaptation to climate variability.

These scenarios are submitted for debate and amendment as widely as possible with a view to bringing out a vision shared by all stakeholders. They are submitted for discussion, amendment and enrichment. With a view to a clear vision of desirable developments and the definition of an operational strategy, including massive and structuring investments and the definition of coherent and harmonised national and regional public policy instruments to support these developments. This strategy should cover the productive dimensions, the concerted management of natural resources and sanitary security, the articulation of governance levels, the deployment of efficient value chains, the management of intra- and extra- trade dimensions of the community, etc.

This is the purpose of the document submitted by the ECOWAS Commission to the various stakeholders. The whole of this ambitious process should make it possible to submit clear and consensual guidelines to the statutory bodies of the Community.

I invite all stakeholders to take an active part in this strategic reflection aimed at informing and building a harmonious future in this crucial sector for the ECOWAS of the Peoples.

Sékou Sangaré
Commissioner for Agriculture, Environment and Water Resources

Executive summary

Livestock in all its forms remains a pillar of the economy and regional integration in West Africa. As a provider of jobs and income for many actors in the value chains on the one hand, and of animal proteins and by-products on the other, it is crucial for food security, nutrition and the resilience of populations. Pastoral and agro-pastoral systems, based on the mobility of livestock to cope with the variability of fodder resources and the availability of water resources, enable the region to make the most of immense semi-arid areas, unsuitable for cultivation, but endowed with a very rich biodiversity, which only ruminants can exploit on the basis of extensive systems. This mobility leads to strong interactions with the host areas (fertility transfers, animal traction, supply of animal products and cereals in border areas and consumption basins in coastal countries, etc.). It is also a factor of social cohesion between communities. Alongside these forms of livestock farming, which are based on an important ancestral know-how that has strongly and constantly adapted over the last few decades, various other forms of so-called "modern" livestock farming have developed: sedentary ruminant farming (ranching), more or less intensive dairy farming, but also various short-cycle livestock (poultry, pigs, rabbits and other species (snails, bees, etc.), especially in peri-urban areas. However, the region still has a large deficit of animal proteins and concentrated feed (maize, soya) to ensure the feeding of intensive and short-cycle industries.

Population growth and urbanisation are leading to a sharp increase in the consumption of animal products, in line with changes in eating habits and the improved purchasing power of a growing proportion of the population. The production costs of proteins based on intensive systems remain uncompetitive compared to imports of often low-end products, and compared to improved traditional systems. Moreover, this demographic growth also affects the rural world and leads to a constant extension of cultivated areas, in the absence of massive strategies and practices of sustainable intensification of agricultural systems. On the other hand, the ruminant livestock population, which is steadily increasing, requires more and more grazing land. The result is increased competition for natural resources, which the current reforms of the agro-

pastoral land tenure codes rarely manage to regulate effectively.

In recent years, conflicts over the use of resources have become more acute, partly due to improved knowledge (observatories) and to increased media coverage. Numerous initiatives are underway to try to pacify relations between pastoralists and farmers: deployment of mechanisms at different scales for dialogue, prevention and management of conflicts, including the development of infrastructures to receive transhumant herders. These mechanisms are inspired by ECOWAS regulations on transhumance and seek to respond to the rise in violence caused by a combination of factors: competition for resources accentuated by climate variability and change, the rise in inter-community conflicts, poor governance, insecurity linked to terrorism and the activities of mafia groups, etc.

In this context, the Sahelian and coastal states are questioning the future of pastoral and agro-pastoral mobility. Several of them have taken drastic measures to reduce transhumance, both internal and cross-border, while seeking to promote the sedentarisation and intensification of livestock farming, and agribusiness. For this flagship sector of regional integration, we are witnessing the rise of development approaches based on the national space. At present, despite the recent development of programmes and projects in support of pastoralism, the positions of the different categories of actors have never been so far apart. This situation makes it urgent and necessary to carry out an in-depth prospective analysis that will enable action to be taken in the medium and long term, making better use of the economic, social and environmental potential of this system and minimising the negative impacts that are affecting it severely.

In line with the Ecowap-2025 orientations, ECOWAS considers that the participatory and inclusive construction of a shared medium- to long-term vision is essential to steer the "day-to-day reforms" and give them a direction. This shared vision, which will eventually be concretised by a strategic framework for intervention and massive investments, goes through four essential phases:

- An in-depth analysis of the functioning of pastoral and agro-pastoral systems through the conduct of two basic works (i) the evaluation of the scope and limits of the regulatory framework for transhumance, (ii) the evaluation of the

economic, social and environmental impacts of mobile livestock systems in West Africa and the Sahel;

- An in-depth analysis of the key variables that determine the past and future trajectories of mobile livestock systems;
- The realisation of a prospective synthesis allowing to "explore the possible futures..." in order to orientate the policies and strategies of the actors at all levels;
- Finally, the formulation of the strategy, intended as a consensual reference framework for interventions in the livestock sub-sector in general and for securing pastoralism and agropastoralism in particular.

Three categories of variables or key determinants of the medium- and long-term trajectories of mobile livestock systems clearly emerge:

- Economic variables involving demographic dynamics, domestic demand and supply of animal products, and its potential to build resilience by generating income-generating activities for young people;
- Determinants linked to changes in the territories under the influence of climate variability and change, land tenure management (agricultural and pastoral) and natural resources;
- Socio-political determinants with regard to the implications of governance patterns and their impact on the security environment, the situation of youth and women.

Three scenarios - not exhaustive - emerge from the combination of the strong assumptions underlying these three categories of key variables:

- **The trend scenario.** Essentially, it prolongs the current major trends in terms of herd numbers, livestock practices, mobility, the functioning of the animal products market marked by the region's high dependence on extra-African imports, etc. In this scenario, public policies and the initiatives of local and regional actors have

little capacity to influence the major challenges of equitable access to natural resources, conflict mitigation and the strengthening of cohesion between communities;

- **The rupture scenario and of withdrawal into the national space.** Conversely, marked by strong state involvement, it favours reasoning, self-sufficiency objectives and public action within the national space. It is guided by a logic of voluntary sedentarisation which results in a major decline in animal mobility. It reflects a desire to modernise livestock farming, which has to be reconciled with land tenure policies that are geared towards the privatisation of land, all of which is likely to revive inter-community tensions. The sedentarisation of herds, which leads to high production costs without significantly improving the supply of animal products to satisfy a rapidly growing demand, is strongly questioned;
- **The scenario of a controlled regional transformation.** It differs from the two previous ones both in content and approach. It seeks to exploit historical positive regional complementarities, by engaging in resolute actions to 'modernise extensive livestock farming' based on mobility, in order to increase productivity and income. It favours a concerted, regional approach and the formulation of a 'win-win' trade-off to strengthen the sector's role in regional integration and reduce its dependence on extra-African imports. Private entrepreneurship exploits a predictable business environment that is highly conducive to the development of the livestock sub-sector.

These three scenarios are explained and documented. They do not exclude, both in the formulation and in the dialogue and negotiation, the design of other medium- to long-term compromise scenarios, and of course transitional stages.

Introduction

Prophecy, forecasting, and foresight don't aim to predict the future, but to help us build it
(de Jouvenel, 2004)

The prospective approach consists of exploring possible futures to the benefit of decision and action, i.e. the development of short, medium and long-term policies and strategies
(Godet, 2016)

The 'Integrated and Secure Livestock and Pastoralism in West Africa' project (PEPISAO) is implemented by the Economic Community of West African States (ECOWAS) and the Inter-State Committee for Drought Control in the Sahel (CILSS) with the financial support of the French Development Agency (AFD). The objective of the project is to "strengthen the resilience of populations and contribute to the economic and social development of the region". Specifically, it aims to "reduce conflicts related to pastoralism through the construction of a shared regional vision on the different modes of ruminant breeding". In particular, PEPISAO is expected to contribute to ensuring that 'the States and stakeholders agree on the future of livestock in the region'ⁱ and, on this basis, adjust their livestock development policy following consultations based on a shared regional vision. This note summarises the work carried out by PEPISAO on the future of mobile livestock systems in the West African region in order to support the consultation process that should underpin the formulation of a regional strategy for **the controlled transformation of livestock systems**.

Building a regional vision on the future of mobile livestock systems

Building a regional outlook for a shared future

In order to contribute to a shared vision of the changes in mobile livestock systems on a regional scale, a prospective approach was adopted. The aim is to prepare for different futures, of the simple continuation of historical and current trends by identifying the dynamics of change over the next twenty years. By analysing these trends and the uncertainties that characterise them, it is possible to identify the variables that may lead to a scenario

of rupture, and those on which it is possible to act to support the necessary transformations of these systems.

These variables were identified and analysed in three prospective notesⁱⁱ dealing, respectively, with economic, environmental - including rural land tenure and climate change - and socio-political issues associated with mobile livestock systems. An assessment of the social, economic and environmental impacts completed the analysis, although the latter, like the analysis as a whole, was severely limited by the lack of updated data (on livestock numbers, productivity/exploitation rates, transhumance flows, trade flows and consumption, assessment of fertility transfers, etc.). Finally, a workshop co-organised with the University of Paris 1-Sorbonne contributed to the mapping and infographics of the work carried out. All these contributions enabled the working groupⁱⁱⁱ set up by ECOWAS to draw up this summary note, which is intended to serve as a **basis for reflection and exchanges to feed the multi-stakeholder dialogue** promoted by the regional community with the support of PEPISAO.

The main questions underlying the reflection

The objective of foresight is not only to better **understand the changes underway in relation to the major trends in the region** in certain areas of the Economy, Society, Politics, Environment, Culture and Technology (ESPECT), but also to consider strategic-level approaches, or even policy measures, to frame the transformations underway. Specifically,^{iv} it is proposed to examine the future of mobile livestock systems in West Africa and the Sahel in the light of a set of key questions:

- At the **economic** level, how can mobile livestock systems (MLS), in the medium and long term, continue to make significant contributions in several areas: i) regional economic integration and beyond that, the issues related to the African Continental Free Trade Area (AfCFTA); ii) the development of the supply of proteins of animal origin in a region subject to a continuous demographic boom and a strong urbanisation dynamic; iii) the strengthening of the resilience of pastoral communities and populations in host areas to economic and social hazards; iv) as a primary link in value-adding value chains, providing jobs for young people and empowering women.

- In terms of the development, protection and shared use of **natural resources**, what are the main medium-term trends (2040) in the regional space, from the point of view of pastoral and agro-pastoral resources (availability of land, soil fertility, fodder resources, agro-industrial by-products)? What is the capacity of the SEMs to valorise the vast, sparsely populated semi-arid areas and their hydraulic resources (surface and underground), taking into account climate variability and change, the need for growth in crop production, including through the extension of cultivated areas, and the imperative of protecting biodiversity? How can livestock and agricultural policies (agricultural land tenure, pastoral mobility, land fertility, hydraulics) anticipate/avoid the exacerbation of competition for access to natural resources and accompany/impulse transformations in agrarian systems combining different agricultural and pastoral valorisations?
- And finally, in the light of the **political and social transformations** that the West Africa and Sahel region is undergoing (contested political governance, proliferation of conflicts of different natures and intensities, population growth, exodus and urbanisation, migration, schooling, increasing difficulties of access to social services, especially to health and education for pastoralists and their children), how are agropastoral and pastoral systems affected? What roles do pastoral groups play in the societies and social cohesion of their countries, including in the formulation of policies and strategies that affect their lives? What policies could consolidate/restore/create dialogue and social and economic interdependencies between groups and communities to reduce apprehensions and strengthen social cohesion?

Mobile Livestock Systems and West African Societies

The place of pastoralism in livestock systems

Pastoralism, in its various forms, has been present on all continents since at least as long ago as the birth of agriculture^v. Like agriculture, it has undergone numerous transformations in most regions of the world, linked with demographics and the urbanisation of societies. On the other hand, transhumant livestock farming is far from disappearing. It is still practised in most of the Saharan-Sahelian, steppe, Mediterranean, mountain and polar areas. The vitality and

resilience of this livestock system is primarily due to economic rationality, as grass is not expensive in areas that cannot be cultivated and are exploited by seasonal grazing. In Asia, in the countries of Central Asia, Mongolia, and even in the Himalayan plateaus, mobile ruminants valorise areas that are not suitable for cultivation. In Europe, transhumance receives public support for the ecosystem services it provides: prevention of overgrowth (and therefore of fires) and avalanches, maintenance of the biodiversity of "open" landscapes, etc.

Figure 1 Mobile livestock systems as a response to climate variability

Sources: from Assouma & alii, 2019 and Marty, 2019

Pastoralism^{vi} is defined by everything to do with mobile livestock. Herd mobility, and often but not always family mobility, is at the heart of the definition. Herd mobility is based on shared access to and community management of water sources (wells, boreholes, ponds) and rangelands (natural grassy and wooded areas, fallow land and post-harvest fields). Mobility is a strategy for adapting to local, seasonal, and interannual variability in rainfall and resources. In the Sahel, vegetation regenerates during the four months of the rainy season, from July to October. This renewed stock also constitutes the main food resource for ruminants during the eight months of the dry season. The herder leads the herd to the best resources of the moment, within the limits of an acceptable effort, which obliges him to move every day and according to the season. In the rainy season, the animals move around the camp every day. In the dry season, they move over tens or hundreds of kilometres: this is transhumance, which can cross several regions of a country and move from one country to another. Herders decide on the routes to ensure drinking and, through the choice of pastures, the animals' feeding needs, and generally in function of the inter-community social links they have developed. Sahelian ruminants have a genetic potential that is adapted to pastoral practices, extreme heat and drought conditions and a wide range of plants. During the dry season, as soon as the quality and quantity of fodder diminishes, the transhumance is organised, leaving a few animals at the main residence. As the transhumance progresses, the animals lose weight because the grass is less rich and the movements require energy. Mobility^{vii} goes hand in hand with extreme flexibility and a permanent capacity to adapt and make decisions. It is the result, on the one hand, of pastoralists who either only keep livestock or combine with agricultural activities and, on the other hand, of farmers who rely more and more on pastoral livestock and, more recently, of wealthy citizens who invest in livestock (more profitable than bank investments)^{viii}. Agropastoralism is thus a combination, in varying proportions, of agricultural and livestock activities.

In the Sahel, the interest of this mobility and flexibility is to respond adequately to the diversity of rural pastoral territories as well as to the random factors that characterise Sahelian climatic conditions, starting with the quantity and distribution of rainfall. Thus, pastoralism is associated with the notion of '**structural variability**'^{ix}, which allows for a good description

of the lived reality of this livestock keeping practice, which involves mobility in particular. This variability is ancient and is attested to in manuscripts in Arabic script that are preserved in certain countries (Mali, Mauritania). It tends to increase under the combined effects of socio-political relations with state representatives and climate change as described by the IPCC, mainly in the Sahel, but also throughout West Africa. In these areas, the alternation of rainy and dry seasons is experiencing unusual episodes that are closer together and more contrasted than before and which increase the occurrence of extreme climatic phenomena (droughts, floods, violent winds, etc.). In addition to the trend towards increased rainfall, there are spatial variations with areas of unequal potential: on the one hand, the relatively secure areas of the valleys and lowlands and, on the other, the more extensive dune or indurated areas that are more uncertain in terms of vegetation to

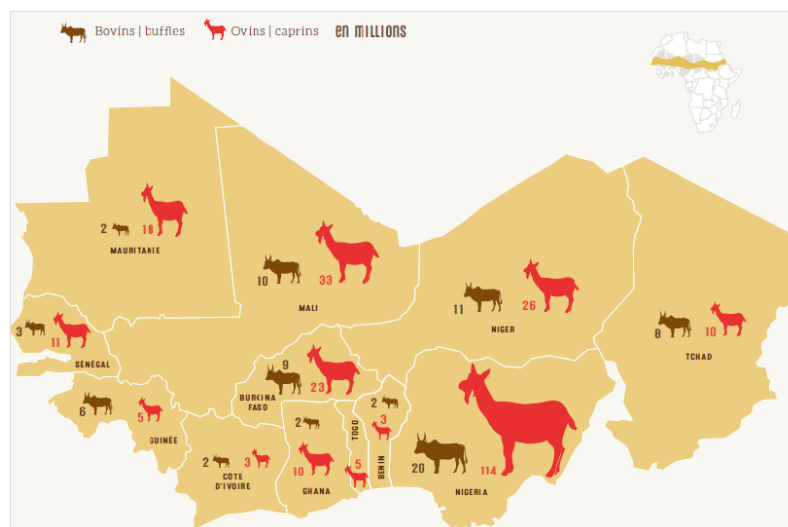
be grazed. According to the CILSS inventory^{ix}, West Africa comprises more than 120 ecoregions, which represents a great diversity of situations and limits any generalisation on a regional scale.

Key data on livestock and agriculture

In 2019, West Africa had 391 million inhabitants, of which approximately 55% live in rural areas. The rural population has grown rapidly: +188% between 1980 and 2015 and the United Nations forecasts sustained growth in the future (+149% by 2050) in a context where the total population is expected to double by 2050 (796 million inhabitants). Migration and mobility characterise the regional space according to constraints, opportunities and contexts^x. They are facilitated by ECOWAS, whose foundations provide for the free movement of goods and people between its member states.

Figure 2 Cattle and sheep/goat livestock numbers by country

Source: Inter-réseaux, 2017 based on Faostat



Concerning livestock^{xi}, West Africa, Chad and Mauritania are estimated to have 77 million cattle, 163 million goats, 104 million sheep and more than 3 million camels^{xii}. These numbers (which are approximate due to the lack of a recent systematic census) have been rising steadily since the 1980s, the last time there was a major drought, with a growth rate of around 2 to 3% per year. However, the growth in numbers is not solely due to pastoralists. Agricultural intensification and the diversification of systems, particularly in the Sudano-Sahelian areas, is leading to the increasing integration of livestock (leading to the 'privatisation' of the use of crop residues and including mobility practices towards

pastoral areas during the cultivation period). In this context, intensive sedentary livestock farming is emerging, but remains in the minority overall. Depending on the agrosystems, they may be one of the causes of tensions in the southern transhumance zones where mobile pastoralists are faced with two different problems: the extension of cultivated areas (fields eat up the savannah, corridors are obstructed) but also the increase in the livestock of sedentary farmers (traction, manure, milk, savings) who therefore demand rangelands and grazing for themselves. Although a minority in number, it could be hypothesised that the increase in cultivated areas

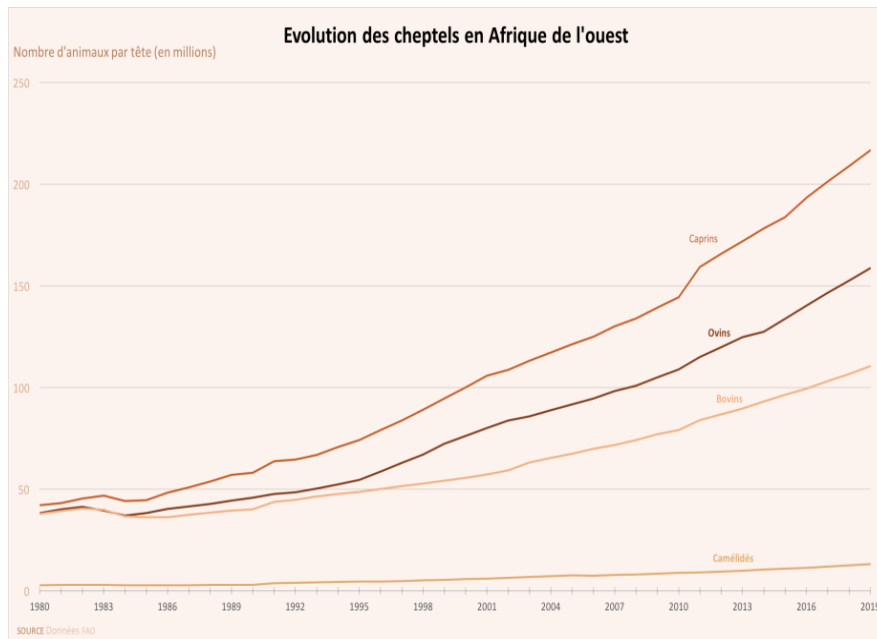
leads to a greater growth in sedentary livestock in these southern agricultural areas.

This raises the thorny issue of access to natural resources. Several tens of millions of pastoralists and agro-pastoralists practice mobility in their livestock production. Moreover, the livestock sector in West Africa is mainly based on the

commercial exchange of livestock between Sahelian pastoral areas and urban consumption centres in coastal countries, with part of the herds' movements corresponding to their transport on foot to markets^{xiii}. Each year, mobile livestock farming provides around 10 million heads of cattle for slaughter.

Figure 3 Evolution of livestock numbers in West Africa

Source: DynPED-Iram workshop, 2021 from FAOStat

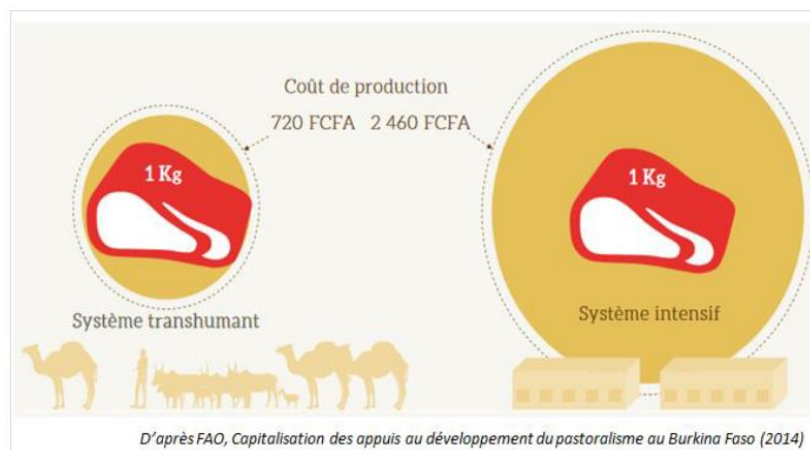


Over the past fifty years, ruminant meat production in West Africa has more than tripled to two million tonnes. Today, **local livestock provide 99% of the local red meat consumed in the region**. The comparison of economic performance explains, to a large extent, the competitiveness of mobile livestock systems. Various studies show

that the cost of producing red meat, which determines its price on consumer markets, is 3 to 3.5 times lower than on ranches, even though ranches can be more productive per head of livestock, i.e. depending on the capital tied up or invested.

Figure 4 Cost of production according to different livestock systems

Source: Inter-réseaux, 2017 based on Fao (2014)

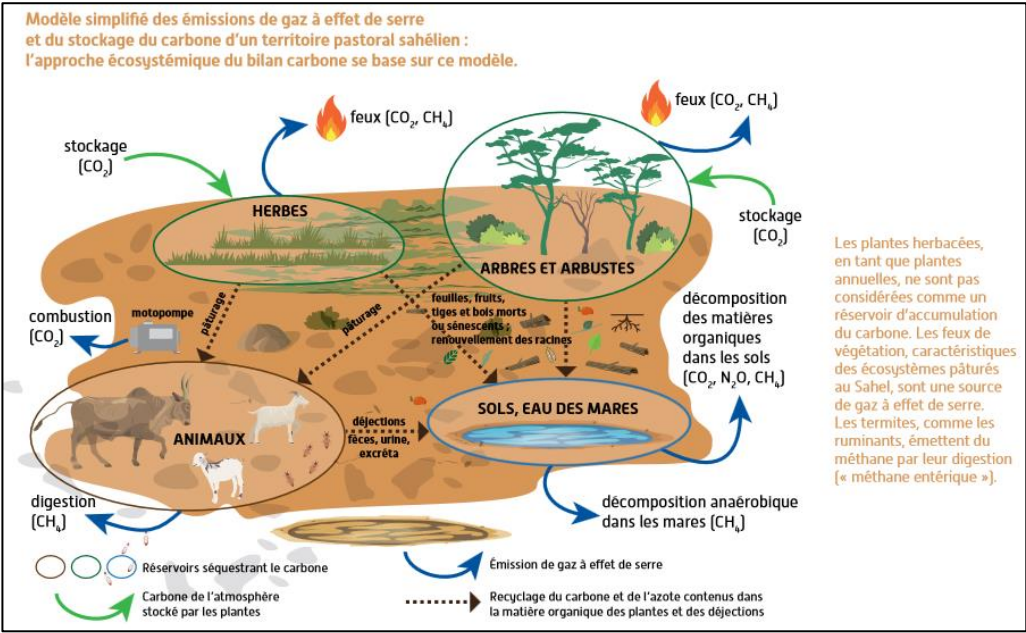


Another major difference between the livestock systems is their environmental performance. The pastoral system contributes very little to greenhouse gas (GHG) emissions. In an ecosystem assessment of GHGs integrating all the components of the carbon balance of this complex system, the pastoral system appears to be in equilibrium and therefore represents a mitigation potential with regard to climate change^{xiv}.

Scientific knowledge establishes that enteric methane emissions are compensated for by various mechanisms that make up this ecosystem in terms of biomass valorisation, the contribution of organic matter and its recycling, and the mobility of animals contributing to significant transfers between different areas of the pastoral space.

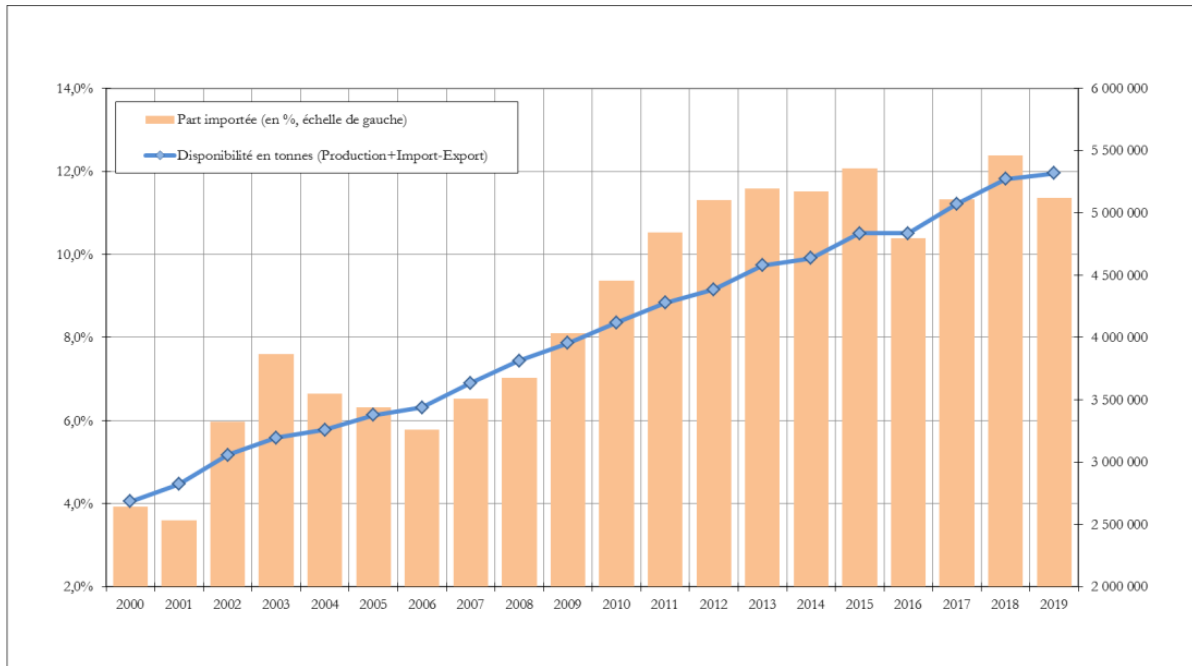
Figure 5 Pastoral livestock, a balanced carbon footprint

Source: Assouma & alii, 2019



The expansion of pastoral production has enabled *per capita* consumption of red meat to be maintained at around 7 kg/capita/year. Red meat imports have remained at a very moderate level in West Africa (ECOWAS, Mauritania & Chad). The imported share of all meat products combined (taking into account consumption patterns in "sauce" and frequent substitutions between different meats and offal), while gradually increasing since 2000, has remained below 13% of total availability.

Figure 6 Meat availability (red meat (pork excluded), poultry & pork) and import share (%)
ECOWAS-Mauritania & Chad, source: Iram-Issala-Lares from FAOStat

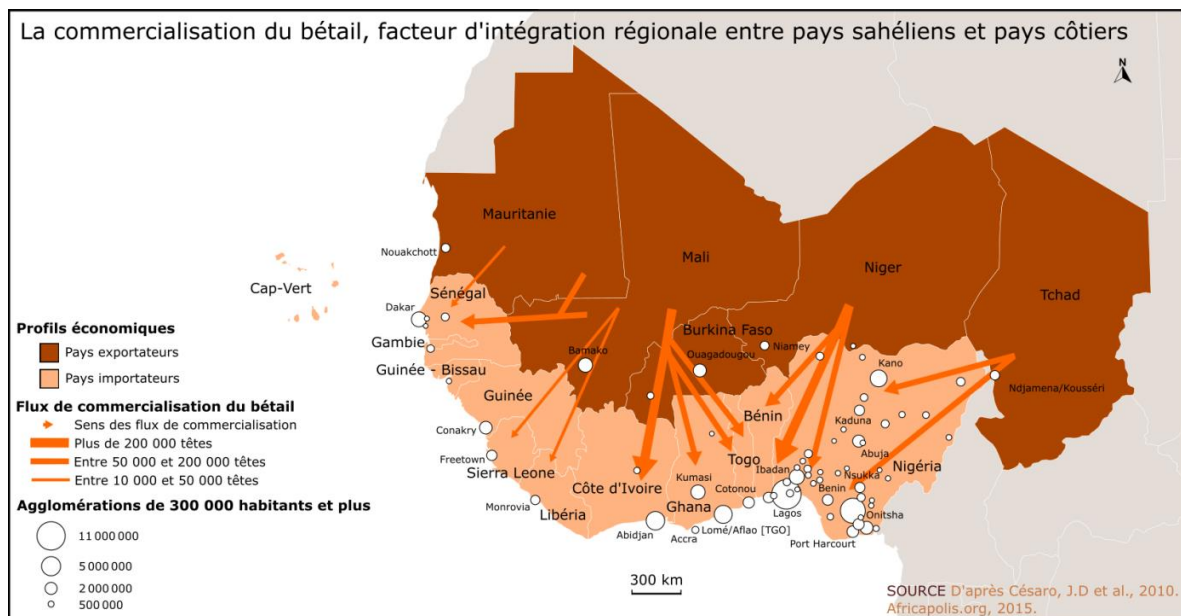


Trade routes, increasingly combining the transport of livestock on foot and by truck, have made it possible to supply the major urban centres

of the sub-region from the pastoral and agro-pastoral territories of the Sahel, making mobile livestock systems an integrated regional system^{xv}.

Figure 7 Livestock marketing flows in West Africa

Source: DynPED-Iram Workshop, 2021



There are many typologies classifying livestock systems in West Africa. A simplified approach distinguishes these systems according to the nature of the livestock, the main crops associated

with the livestock, the extent of mobility and, as a corollary, the scale covered by their movements: local, national or cross-border.

Figure 8 Typology of livestock systems

Source: DynPED-Iram Workshop, 2021

	Distance parcourue	Echelle des transhumances	Nature des cheptels	Type de culture associée
Pastoral transhumant	Grande amplitude +300km	Transfrontalière	Ovins Caprins Bovins Camélidés	/
Agro-pastoral	Grande amplitude 100-300km	Transfrontalière	Ovins Caprins Bovins Camélidés	Céréales
	Faible amplitude < 100km	Nationale	Bovins	Céréales
Sédentaire	/	/	Ovins Caprins Bovins Camélidés	/

SOURCES OECD, 2008 ; Chapitre 2 du rapport provisoire impacts élevage mobile, 2020. Réalisé par l'Atelier DynPED-IRAM.

In addition to the agriculture-livestock associations typical of agro-pastoralism, there are close relationships between agricultural systems and mobile livestock systems. In many agricultural territories, crop fields are open to grazing after the harvest or when they are left fallow. Farmers then benefit from the manure provided by the animals. More broadly, there are many forms of cooperation between farmers and livestock keepers, including food donations and exchanges, entrusting and guarding, transporting harvests, monitoring plots of land and contracts to fertilise

farmland. However, the development of livestock within farming systems is changing this. Farmers are using their own livestock to add value to their crop residues, thus limiting access to transhumant herders. We are also witnessing a monetisation of access to these residues as well as to water. This dynamic remains difficult to document quantitatively. But it is clear that it is a growing practice, consistent with the development of sustainable production systems (agroecology), contributing to income diversification and greater resilience of farming systems.

Figure 9 Farmer-herder relationships and the connection of pastoralist livestock systems^{vi}

Inter-réseaux--PRAPS, 2017



Pastoral livestock breeding with seasonal regional mobility has a long history of links with sedentary livestock production systems, with which there are many collaborations. Sedentary herders act as 'hosts' and intermediaries, or even representatives, for transhumant pastoralists passing through. Pastoralists may entrust their 'hosts' with injured or sick animals, or with animals that need to be sold, and sedentary pastoralists may entrust part of their livestock to mobile pastoralists for transhumance. There are also many connections between transhumant pastoralists and specialist sedentary agro-livestock breeders in semi-arid, sub-humid and peri-urban areas. Transhumant pastoralists supply young animals through direct contracts or through livestock markets. This includes young males either for animal traction or fattening, and young suckling females for the renewal of dairy herds in peri-urban units. Dry-season transhumance in sub-humid and humid agropastoral areas also benefits soil fertility management on cultivated land by accelerating the recycling of organic matter and transferring fertility to fields chosen for the manure.

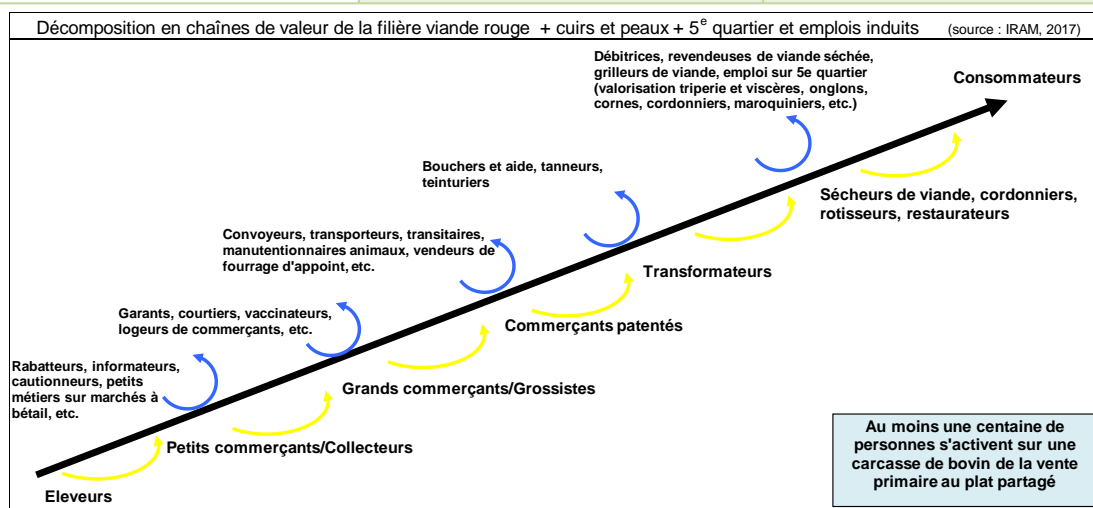
Beyond livestock keepers, value chains of mobile livestock contribute to the economy of countries in the region and provide a significant number of jobs. The study on the impacts of livestock systems (Iram-Issala-Lares, 2021) reveals the difficulties in estimating the socio-economic contributions of livestock in West Africa, especially as certain contributions (animal traction, organic manure) are rarely taken into account in the estimates. In Sahelian countries, the contribution of livestock varies between 10 and 15% of GDP and would correspond to an average of nearly 40% of agricultural GDP. A global estimate for the region (ECOWAS, Mauritania and Chad) based on the LSIPT tool (FAO) indicates a contribution of livestock to GDP of between 3 and 4% for the

whole of West Africa, of which more than 60% corresponds to mobile livestock. Livestock production would make a significant contribution (around 50%) to the income of rural households, the main victims of poverty, and an equally significant share to employment and activity systems. It is important to include in the livestock activities, the jobs linked to livestock markets and their supply by transhumant animals, those linked to collection and processing centres, the installation of feed distribution centres, veterinary posts, vaccination parks, the operation of slaughterhouses and the many points of sale and distribution of meat or other animal products. This analysis should also include activities related to the valorisation of by-products (hides, skins, etc.).

Figure 10 Actors and functions in livestock value chains

Sources: Iram-Issala-Lares, 2021 & Iram, 2017 adapted by Praps-ETP-4

Étapes du circuit de commercialisation	Acteurs	Rôles
Production	Les éleveurs locaux et des pays sahéliens : Pasteurs, agro-éleveurs, emboucheurs	Ils remplissent la fonction de production et de fourniture d'animaux.
Approvisionnement des marchés à bétail	Collecteurs et convoyeurs à pieds puisqu'ils gèrent une part croissante du commerce du bétail	Ils sillonnent les marchés ruraux et villages pour s'approvisionner en bêtes et constituer un stock destiné à la vente.
	Les « aides » au chargement et déchargement	Ils assurent le chargement et le déchargement des animaux au départ et à l'arrivée
	Tuteur ou logeur	Il est l'intermédiaire entre le marchand de bétail et le client. Il est également garant des animaux.
	Marchands	Ils s'approvisionnent principalement chez les collecteurs et parfois chez les emboucheurs et les producteurs.
Circuit mort	Chevillards	Ils abattent et vendent en gros aux bouchers et autres acheteurs.
	Bouchers	Les bouchers vendent au détail la viande dans une boucherie.



Livestock mobility, between continuity and permanent adaptation

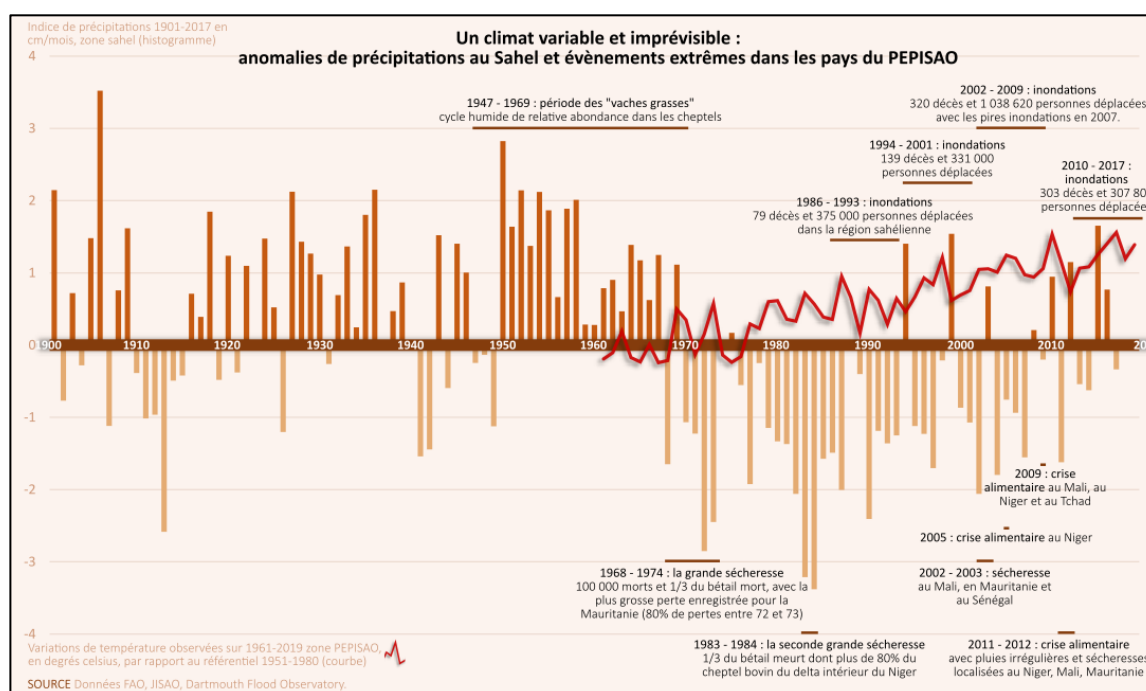
Climate change and **population growth** are nevertheless leading to profound changes in mobile livestock practices^{xvii}.

Although a historical trend of southward shifting of isohyets was observed before the 2000s in West Africa, climate observations and modelling available in the climate change literature contradict the predictions of progressive aridification of West Africa.

For the last few decades, rainfall is on average higher than during the dry decades of 1970-1990^{xviii}, particularly on the coast, but it is the inequalities in spatial and temporal distribution, as well as the interannual variations, that are most noticeable. These changes, while they favour plant growth where the soils allow it, particularly on the Saharan margins of the Sahel, also accentuate soil leaching and acidity and accelerate the mineralisation of organic matter, which affect soil fertility. They also tend to increase more localised extreme events, such as floods.

Figure 11 Evolution of temperatures and extreme events in West Africa

Source: DynPED-Iram Workshop, 2021



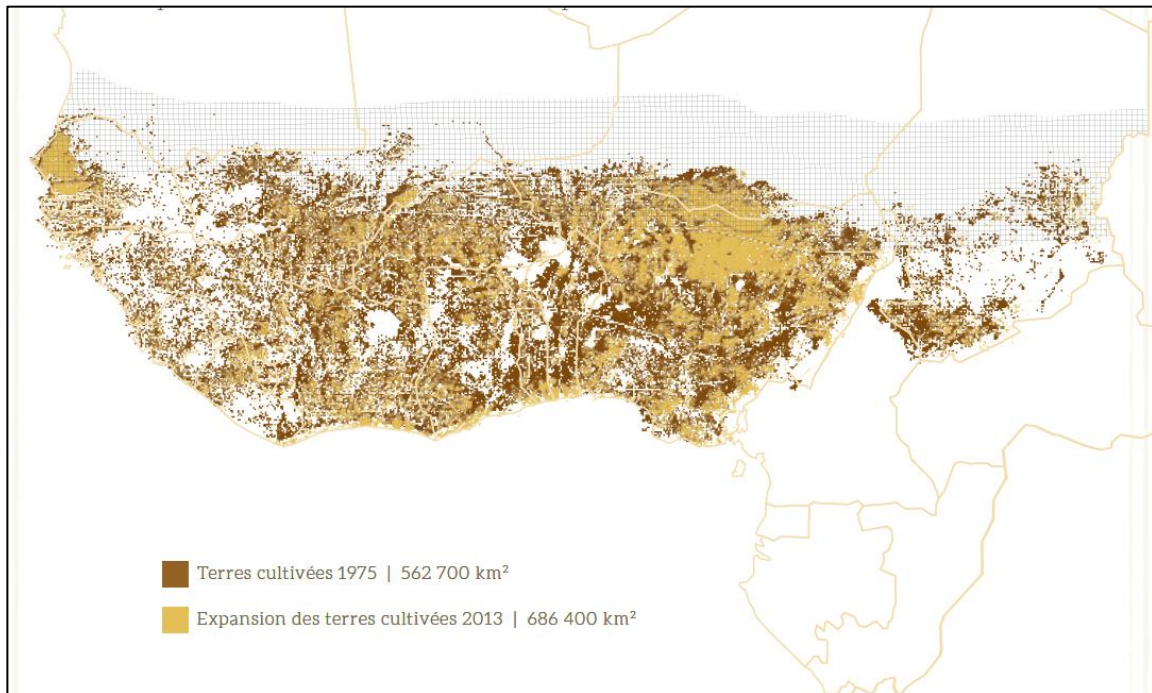
Increasing rainfall trends, accompanied by rising temperatures, especially in the dry season, and increasing atmospheric CO₂ concentration should favour plant growth, at least where soil nitrogen and phosphorus fertility allow, and in particular on the Saharan margins of the Sahel^{xix}. Indeed, these same factors should also reinforce soil leaching, worsen acidity and accelerate the mineralisation of organic matter, leading to a drop in productivity. It is also possible that these trends, especially the increase in CO₂ levels, favour plants with C₃-type photosynthesis, in particular woody plants, to the detriment of plants with C₄-type photosynthesis, in particular annual grasses in the Sahel and perennial grasses in the savannah. This could eventually lead to the overgrowth of

rangelands and savannahs, which is already very prevalent in southern and eastern Africa.

Similarly, the increase in population has been accompanied by an expansion of cultivated areas at a rate close to human demography. Cultivated areas have increased (+122% between 1975 and 2013 according to CILSS, 2016) to the detriment of pasture and fallow land, reducing natural grazing areas, fragmenting spaces and leading to more difficult access requiring more precautions, tighter guarding and increased negotiations between farmers and herders. The reduction in pastoral resources, the reduction in the size of the area and access to pastures are all obstacles to the regional and seasonal transhumance of mobile herds

Figure 12 Expansion of cultivated areas between 1975 & 2013

Source: PRAPS-Inter-réseaux, 2017 (based on CILSS, 2016)



Mobility in West African societies: actors, territories and policies

Changes in mobility, adaptation strategies of actors and in the territories

As noted by P. Hiernaux and M. Assouma in their prospective synthesis, the dry season fodder deficit has worsened, especially as livestock density has also increased. The seasonal fodder deficit is aggravated by the disparity in access to water, which is linked to the irregular network of water points and their varying capacities and status. Water points can be locally abundant, as in the Senegalese Ferlo, but can form a very loose and disparate network in pastoral regions such as Gourma in Mali. Fodder resources in under-equipped regions are under-utilised to the detriment of heavy loads around permanent surface water points and large boreholes in the dry season. In addition, insecurity in the Sahel and northern parts of coastal countries creates additional obstacles to livestock mobility in the wet and dry seasons. Finally, land privatisation policies with the allocation of property titles to large farms (ranches, plantations or very large irrigated farms in deltas or even pastoral areas) impact on transhumance routes and access to water and pasture (and in some cases considerable areas are allocated to private investors).

The first adaptation of pastoralist families to restrictions in access to vital pastoral resources is to diversify their economic activities, often by growing food crops to meet family food needs. This implies a minimum of land access rights, usually denied to pastoralists in sub-humid zones, and sedentarisation for at least part of the year and for part of the family. This diversification in turn contributes to the expansion of cultivated land, particularly in arid zones, towards the north of the agricultural front. Furthermore, the strengthening of pluri-activity within pastoral families, while facilitating children's schooling and access to health care, contributes to a reduction of young men's skills in traditional livestock rearing techniques and daily management of livestock (herding, care, guarding, access to good pasture and watering), which could lead to a shortage of skilled labour and the gradual loss of know-how and tactical relational networks for the routes). However, some herders' and pastoralists' organisations have become fully aware of these changes, involve young people in thinking about their future, and provide training targeted at the new generations, integrating the changes in herding techniques and their socio-economic aspirations.

The consideration of mobility by institutions and public policies^{xx}

In contrast to crops, forestry and agroforestry, public investment in livestock remained very limited until 2013, without any relation to the economic contribution of livestock^{xxi}. It mainly focused on veterinary health, followed by a revival of pastoral water infrastructure and the marking of grazing areas and passage corridors in the early 2000s in several Sahelian countries. More recently, support has also been directed towards improving livestock trade infrastructure, particularly livestock markets, the governance of which is the subject of much debate between customary authorities, regional administrations and decentralised authorities. Several interventions also concern the development of the sector, notably the promotion of value chains (collection centres, mini-dairies, feed warehouses). For the most part, these investments are based on the financing of international programmes.

In addition, there seems to be a divide between the livestock policies of Sahelian and coastal countries. Indeed, the economic and social contribution of pastoral livestock is beginning to be officially recognised in Sahelian countries with the recommendations of the N'Djamena Declaration (2013) followed by the political agreements of the Nouakchott Declaration (2013). This recognition has been accompanied by the funding of dedicated development projects such as the Regional Support Project for Pastoralism in the Sahel (PRAPS), but also the Regional Investment Programme for Livestock Development in Coastal Countries (PRIDEC), whose launch has been delayed due to lack of funding, the Livestock Development Support Project (PADEL), the Regional Dialogue and Investment Project for Pastoralism and Transhumance in the Sahel and Coastal Countries of West Africa (PREDIP), the Programme for the Sustainable Development of Pastoral Exploitation in the Sahel (PDDEPS) the Integrated and Secure Livestock and Pastoralism in West Africa Project (PEPISAO) and the Support Project for Meat and Livestock Marketing in West Africa and Chad (PACBAO), which focuses more on regional animal value chains.

In the pastoral territories, the objective is to rehabilitate, complete and promote a sustainable and more transparent management of hydraulic, veterinary and commercial infrastructures in line with decentralisation policies, while ensuring a strong involvement of the associations of herders in these territories. In the agropastoral territories, the objective is to support local and regional

consultation frameworks in order to make dry season transhumance more efficient and mutually beneficial through the delimitation of grazing areas and the securing of passage corridors. However, in coastal countries, as in the south of some Sahelian countries, this objective is opposed to the desire to 'modernise' livestock farming, which would involve its sedentarisation, by replacing grazing on natural pastures with a system of feeding and distribution of fodder and feed harvested on the farm, purchased on the market or from animal feed manufacturers.

This objective of sedentarisation of livestock farming goes hand in hand with a policy of securing land tenure, which aims to grant land titles to farmers. Seasonally mobile pastoralists, who until now have played a dominant role in livestock production in coastal countries, risk being excluded from this privatisation, as they are not permanent residents and use common areas without delimitation of exploitation areas and for pastoral purposes. This policy of land privatisation accompanies a general trend towards administrative deconcentration followed, in some countries, by partial decentralisation, which collides with the verticality of political power reinforced by the militarisation carried out in response to civil insecurity and terrorism.

Recent developments in pastoral policies have led to the codification of pastoral activity in order to orchestrate mobility^{xxii}. Since independence, many public policies have promoted sedentarisation, *ranching*, intensification and modernisation of livestock farming. These systems have proved unsuitable for the highly variable Sahelian ecosystems. In the north and centre of coastal countries, where fodder resources are less uncertain and fodder improvements are possible, public ranches (financed by Europe and the World Bank) were created in the 1970s (Côte d'Ivoire). Their economic balance has never been achieved.

Over the past fifteen years, governments, technical and financial partners and regional pastoral organisations have become aware of the need to support the development of pastoral areas, as well as the mobility of herds. Mali, Mauritania and Niger have developed pastoral laws and codes (a draft pastoral code has also been prepared by Chad), but their effective implementation remains difficult. Niger, Mali and Chad have developed a national pastoral water strategy (SNHP, SNDP in Chad). Chad, Niger, Mali, Burkina Faso, Senegal and Mauritania have undertaken^{xxiii} large-scale pastoral infrastructure renovation actions. These

approaches are based on consultation and the securing of transhumance routes. With the accompaniment of the negotiation of inter-community social agreements for the management of pastoral water points and the securing of pastoral areas, a local and negotiated land management approach has been developed and has become essential today, including in national pastoral water strategies, for example. It is particularly in this sense that ECOWAS has supported the exchange of experiences and the orientations of the Ndjamena Declaration (2021) on securing agro-pastoral land tenure in West and Central Africa^{xxiv}

In the Sahelian countries, the evolution shows a significant evolution in perceptions and a general awareness of the political, economic, social and environmental stakes of pastoralism on the part of states, their financial partners and a large part of civil society. Nevertheless, there is a growing asymmetry between pastoral land policies in Sahelian and coastal countries. In parallel with the fairly widespread evolution of livestock policies in Sahelian countries during the 1990s and 2000s, several coastal countries, which had developed fairly voluntarist policies for transhumance in the 1980s, have questioned these orientations since the end of the 2000s.

The period of hosting policies in coastal countries can be illustrated by the example of Côte d'Ivoire, which in the 1980s built up a solid investment policy aimed at developing extensive livestock/pastoral farming in the northern part (transhumant and sedentary - cultivation with

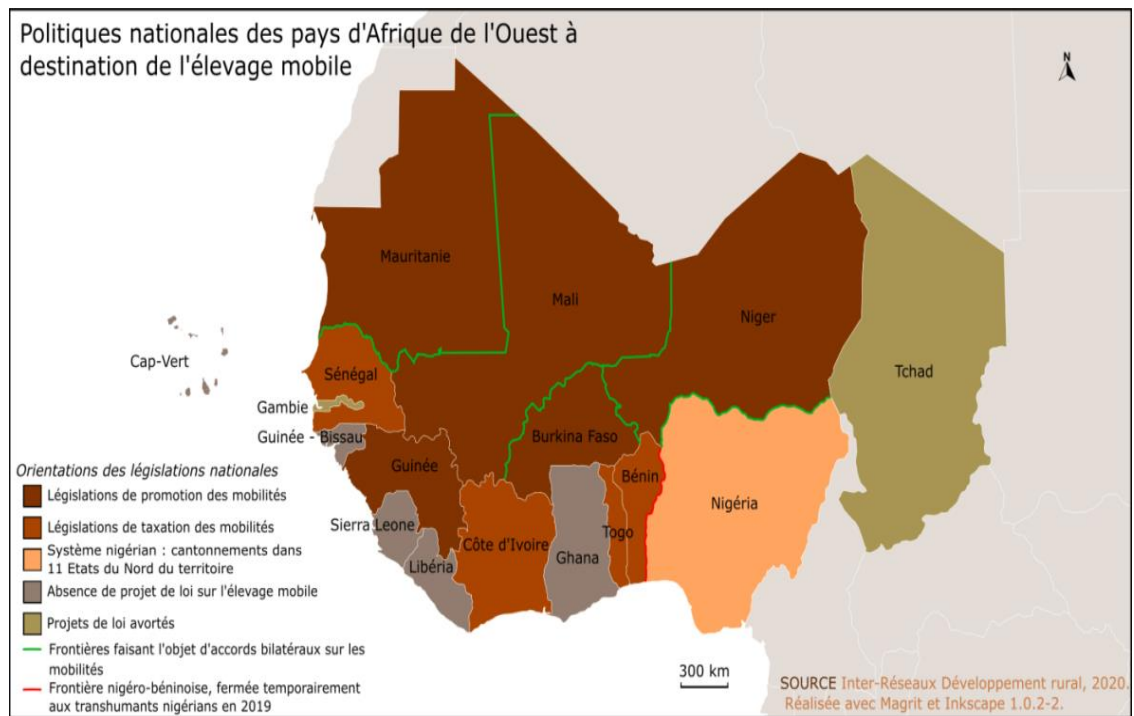
animal traction), but also 'intensive' livestock farming in the centre (milk, sheep), and short-cycle sectors. The investments made by SODEPRA at that time concerned about three hundred water points, producing fodder blocks and providing enhanced animal health services in the north of the country. This experience of SODEPRA illustrates that an 'integral' policy for a coastal country is possible based on a strong livestock development policy.

During the great drought of 1984, Benin also opened its border to Nigerien livestock, activating a large-scale hosting and vaccination operation for the affected herds from Niger. The 2009 pastoral crisis was indicative of the change in policy of the coastal countries. Herders from Niger who were preparing to withdraw to the coastal countries, particularly Nigeria and Benin, were quickly dissuaded by political statements from these two countries, which were hostile to an exceptional transhumance. The length of the dry season in the Sahelian zone and the impossibility of reaching the rain front of the following season caused significant losses for the herders. Moreover, the national authorities have been slow to recognise the crisis situation, despite multiple alerts from pastoral organisations and several observers.

The differentiated mapping of pastoral land policies in the region reveals, on the one hand, new power relations and interest and, on the other hand, controversies, conflicts, competition or alliances between actors and institutions that come into play in the production of pastoral land policies.

Figure 13 National policies on livestock mobility

Source: DynPED-Iram Workshop, 2021



At the regional level, several texts regulate cross-border transhumance. These various laws by country complement the ECOWAS protocol regulating transhumance since 1998. The political will to better manage transhumance between states in the community space resulted in the adoption of the 1998 common regulatory framework^{xv}, whose regulation enabling its application was adopted in 2003. These texts defined rules governing access of transhumant livestock to pastoral resources in host areas, the

creation of national committees in charge of transhumance in several countries (Benin, Togo, Ghana, Niger, Burkina Faso) and the impetus of a consultation process between certain countries sharing a common border to deal with cross-border transhumance flows. This protocol recognises the importance of cross-border pastoral mobility and aims to reduce problems when herds move, particularly conflicts between farmers and herders and the spread of animal diseases (epizootic diseases).

1. The variables of change: trends and uncertainties to consider

The variables that guide the dynamics of change in mobile livestock systems can, on the basis of the three prospective notes, be organised into three main categories: socio-economic dimensions, environmental aspects (including the expected disruptions caused by climate change) and more specifically socio-political and institutional orientations.

1.1 Socio-economic dimensions

Changes in demand for animal products, demographics and urbanisation

The analysis of **agricultural and food systems** on a regional scale is based on a set of hypotheses concerning the **evolution of demand for animal products, in particular meat and dairy**

products. The evolution of future demand depends, in the first place, on the number of inhabitants linked to demographic projections, but also on the importance of the rural exodus and the process of urbanisation that may profoundly modify food consumption patterns^{xxvi} and, in the background, the quality and origin of the food consumed. The table below shows two estimates of the evolution of meat consumption, and therefore demand, in 2030 and 2040 in the ECOWAS zone. The first estimate is based on the hypothesis that the per capita consumption of the different types of meat remains at the same level as in 2020. The second estimate is based on the assumption that per capita consumption of the different types of meat increases or decreases at the same rate as during the period 2010-2020.

Figure 14 Estimates of demand in the ECOWAS zone for different types of meat in 2030 and 2040^{xxvii}

	Historique					Estimations prévisionnelles											
	2010		2020		Evolution de la consommation par capita (2010-2020)	Consommation par capita au même niveau qu'en 2020						Consommation par capita qui évolue au même rythme qu'entre 2010-2020					
	Consommation totale (tonnes)	Consommation par capita (kg)	Consommation totale (tonnes)	Consommation par capita (kg)		2030	2040	Evolution de la consommation totale (2020-2030)	Evolution de la consommation par capita (kg)	2030	2040	Evolution de la consommation totale (2020-2030)	Evolution de la consommation par capita (kg)				
Viande bovine	788 218	2,60	924036	2,33	-10%	1 187 969	29%	2,33	1 495 059	62%	2,33	1 064 265	15%	2,08	1 183 696	28%	1,842
Viande ovine	282 811	0,93	291 266	0,73	-21%	374 463	29%	0,73	471 259	62%	0,73	294 714	1%	0,58	270 535	-7%	0,421
Viande caprine	408 305	1,35	442012	1,11	-17%	568 264	29%	1,11	715 161	62%	1,11	470 112	6%	0,92	468 113	6%	0,728
Viande porcine	372 829	1,23	525692	1,32	8%	675 846	29%	1,32	850 552	62%	1,32	728 235	39%	1,43	982 415	87%	1,529
Poulet	739 311	2,44	1206365	3,04	25%	1 550 940	29%	3,04	1 951 858	62%	3,04	1 933 965	60%	3,79	2 915 933	142%	4,537
Totale/moyenne	2 591 475	8,54	3 389 371	8,53	0%	4 357 479	29%	8,53	5 483 888	62%	8,53	4 491 291	33%	8,80	5 820 692	72%	9,06

For comparison, it is important to note that the OECD and FAO (2021) predictions for Africa as a whole are for a per capita consumption of meat (beef, sheep, pork and poultry) of 13.02 kg in 2018-2020 and 12.73 kg in 2030.

Income, inequality and consumption

Among the variables conditioning the quality of products consumed and, mainly in urban areas, available on food markets, **the question of monetary income and its inequalities** is essential to the analysis of possible trajectories in terms of changing consumption patterns. Depending on the evolution of average per capita income and its more or less accentuated differentiation, different consumption segments are likely to emerge, based on the availability of basic food products at low prices and the search for quality products, both in terms of health and origin. The relative importance of these different segments conditions the volume of meat consumed and the relative share of the different sectors or value chains intended to supply the market with more or less constraints in terms of sanitary safety and product traceability.

Trade flows and imports

Part of the existing sectors relies on the import of animal products, which are themselves differentiated between basic products (offal, white meat and frozen fish, milk powder) and quality products (certified, prepared red meat, packaged or frozen). The importance of **imported products** depends, in connection with the observed trends in consumption, on the level and quality of demand and relative prices (compared with local prices), which are shaped around the production costs (and therefore productivity differentials, but also trade policies (domestic and export subsidies) of the supplier countries, the logistics chain (port infrastructure, cold stores, distribution supplies) and the taxation applied to these products, with the ECOWAS Common External Tariff (CET) constituting the reference for guidance and arbitration for the West African countries^{xxviii}.

Structure, jobs, productivity and competitiveness of animal value chains

The articulation and **prospects for the substitution of locally produced animal**

products by imported products depend on the importance that these animal production value chains will take on at the regional level. While *ranching*^{xxix} has not yet developed as expected, agro-industrial production units - poultry, aquaculture or pigs - are developing on the outskirts of the major urban centres. Following the market trends previously observed, it is likely that their development will absorb at least part of the expected increase in the consumption of meat products, particularly as a result of urbanisation. If they reduce meat imports, they could, on the other hand, accentuate the cereal (maize) and oleo-proteaginous deficit, or on the contrary stimulate the development of these productions.

The question also arises in the case of dairy products, in connection with the development of mini-dairies on the outskirts of urban centres and collection networks of small and medium-sized dairy processing units.

Figure 15 Mobile livestock system and prices of meat products^{xxx}

The performance of mobile livestock systems is all the more remarkable as consumer prices remain relatively low. Commercial margins are strongly influenced by the price of meat. The retail price is an important determinant of consumer choice, due to their low purchasing power. In fact, the retail price of beef at the butcher's stall does not exceed 2,000 to 2,500 CFA francs (3 to 4 €) per kg in Central and West Africa. This price has changed little since the 1990s. In parallel with the increase in transport costs, livestock operators have had to tighten their margins in order to guarantee the efficiency of the sector. In West Africa, the actors in the sector - producers but also and above all traders - have reduced their profit margins in order to maintain an acceptable consumer price. Moreover, most field studies emphasise the good distribution of margins within the sector, for both cattle and small ruminants. The price multiplication rate between the producer and the consumer in West Africa is only between 1.5 and 2.3, whereas it is around 5 to 8 in Europe.

In any case, the importance of these value chains will depend heavily on the investments that will be made (including upstream and downstream of the production stage) and on the competition from imported substitute products, such as frozen meat or milk powder, and their competitiveness. The latter is largely based on the cost of animal feed and veterinary medicines, which are still mainly imported. In addition to these economic considerations, it is important to add the health and social issues linked to the increase in this type of livestock farming, whether it be the risk of epidemics (avian flu), zoonoses (brucellosis, anthrax), residues (antibiotics) or environmental nuisances (odours, effluents to be managed on the outskirts of rapidly expanding towns).

Competition over land use is no longer limited to agricultural and livestock production, but also includes urban housing and infrastructure (roads, etc.).

1.2 Environment and climate change

Animal numbers and feed availability

Retrospective analyses attest to the significant resilience of mobile livestock and its capacity to reconstitute herds after an event affecting the availability of fodder resources (droughts, etc.)^{xxxi}. This resilience is based, in the first place, on the mobility of animals. But how far is it possible to project the **growth in numbers** and what **forage capacity is available** for the development of mobile livestock systems?

This question is difficult to answer on a scale as large as West Africa. Rebuilding a herd takes time, and once a certain level of loss is reached, it is no longer possible^{xxxii}. The decline in livestock numbers affects the vulnerability of pastoralists over many years. It leads some of them, including young people, to turn to other activities and livelihoods.

Moreover, forage and water resources are spread out from north to south along a bioclimatic gradient that extends towards the sub-humid zones, starting with hyper-arid zones where there are sparse herbaceous steppes with bushes and shrubs in rangelands whose production and forage qualities vary greatly from one year to the next. This resource is structurally unbalanced^{xxxiii}, for which mobility can compensate and adjust to the needs of the herds.

Nevertheless, the **forage resources of rangelands are decreasing** as a result of the reduction of their surfaces due to the advance of agricultural fronts and urban sprawl^{xxxiv}. They are also faced with overexploitation and climate change which reduce their productivity and quality. In addition, the reduction in the area of rangelands is accompanied by their fragmentation and the occupation of passage corridors, which reduces access to the remaining pastures, particularly to the areas or enclaves of rangelands that are tacitly set aside by herders in certain regions (as in Niger) and, sometimes, to water points.

Pastoral resources, biodiversity and climate change

There is therefore competition for **access to natural resources** (water, vegetation, etc.) and

land. Pastoral livestock farming is often perceived as a source of degradation of vegetation through 'overgrazing' and of the environment by accelerating erosive processes, and as an emitter of greenhouse gases, enteric methane in particular. However, the scientific knowledge available weighs the impact of grazing on production and plant diversity. The strong seasonality of the growth phase, the typical non-equilibrium dynamics of the vegetation that derive from it and the selective behaviour of the livestock during grazing would explain the moderation of this degradation.

However, while many studies credit pastoralism with the ability to regenerate soil fertility, the implicit laissez-faire land policies implemented by almost all countries have long favoured the expansion of cultivated land¹ to the detriment of rangelands and thus pastoral livestock. The growing difficulties of access to rangelands and water points for mobile livestock systems are at the root of proposals, often hasty, for conversion or sedentarisation with the elimination of mobility, particularly in coastal countries, but not only.

In a context of exacerbated competition over natural resources, a dynamic of recomposition of pastoral areas in connection with the adaptation of pastoral societies is occurring. This is reflected, in part, by the fixation of herders in their base areas or in the areas they travel to during their transhumance campaigns. This process of settling herder families is sometimes encouraged and planned by the public authorities (as in Benin). It reveals not only an awareness on the part of the public authorities of the difficulties of transhumance and the need for pastoral communities to be territorially anchored, but also the growing demand of pastoralists to have secure access to essential social resources and services. It is accompanied by an aspiration to strengthen their capacity for action and to defend their interests: the creation of fixation points to ensure a land base through the cultivation of plots, the construction of a water point, the construction of classrooms and permanent houses, etc.

1.3 Territories, institutions and public policies^{xxxv}

Rural territories, local governance and decentralisation

Access to pastoral resources also depends on the **governance of rural territories**. At this level, the **decentralisation policies** initiated in the 1990s in most West African countries have raised many hopes for improving the efficiency of local public service delivery systems adapted to local needs (health, education, civil status, etc.); consolidating local democracy, thanks to the more active and sustained involvement of citizens in the process of administering local affairs; and, finally, improving the governance of territories and the management of their natural resources.

These expectations are based on the fact that in several countries in the region, legislative and regulatory texts governing decentralisation have transferred powers over **land and other natural resource management** to local authorities. However, in many cases, the central administration is still reluctant to transfer real powers and resources to these authorities, arguing that they are not yet able to fully assume such prerogatives.

Decentralisation is accompanied by many risks for pastoral communities and livestock mobility: increased taxation, obstacles to animal mobility, a restrictive vision of communal space that does not take mobility into account, the creation of local authorities without a territory for pastoralists (Niger, Mali), etc. Throughout the Sahel, the implementation of the decentralisation policy has caused significant collateral damage for pastoralists, due in particular to two main factors: their poor representation in the municipal councils set up in agro-pastoral areas and the tendency of most rural producers, including those engaged in livestock activities, to give priority to agriculture in planning instruments (communal development plan, strategy and priority projects). Ultimately, (i) the transfer of competences to local authorities must be ensured by the State and (ii) the exercise of these pastoral competences must be supervised, in the national interest, with regard to the legality of the decisions of the communes. Nevertheless, decentralisation represents a decisive option in terms of sustainable management of resources and their access/use by different users, and in terms of local development. But it requires (i) a framework of common rules, established at national and regional level (for

¹ And in a context of generally low agricultural productivity progress.

transboundary areas); (ii) a transfer of resources and control of the use of these resources; (iii) the deployment of an equitable local tax system.

Public policy and governance

Many **public policies** have an impact on pastoral systems in West Africa. To analyse them, it is necessary to take into account the aftermath of the decades of implementation of structural adjustment programmes. Marked by the disengagement of states and the restructuring of support services, these programmes have had strong repercussions on public services in rural areas, particularly in the pastoral environment, where there has been a drastic reduction in the supply of basic social services (health, education, drinking water, vaccination and veterinary care for animals, etc.), and even in some rare cases of advisory services for livestock farmers.

In theory, the vacuum left by the state should have been filled by the emergence of the private sector^{xxxvi} and by the strengthening of the dynamics of structuring professional livestock farmers' organisations. However, pastoral areas are not very attractive to private promoters specialising in the provision of services, except those dedicated to animal health or developed, at a distance, through digital applications (such as money transfer services). Moreover, the dynamics of structuring rural producers developed earlier in the agricultural sector (with the emergence and consolidation of sector organisations for export-oriented cash crops) than in the pastoral environment. The geographical dispersion and mobility of herders have long been obstacles to the formal **professionalisation** of the mobile livestock sector. However, pastoral mobility is only possible on the basis of a highly structured social organisation of livestock farmers, who have access to the right information and negotiate access to water and pasture, and who can take advantage of a favourable ratio on the markets between cereal prices and livestock prices. It is in particular by federating these social organisations built to manage mobility that organisations such as AREN in Niger and CORET in Nigeria have been formed. However, at the regional level, APSS and the RBM are now two recognised actors in the political dialogue.

The lack of **political governance** is at the root of the weak implementation of legislative and regulatory texts taking into account the specificities of pastoralism. **The recognition of pastoralism is important** in a set of texts, but

there is still a long way to go to implement them in a context where public institutions are weak and not very capable of enforcing enacted pastoral legislation and implementing adopted public policies. The challenge of the fair and legitimate application of the law is acute given several factors, notably the low level of ownership of legislation by the actors and the delay in the drafting of application decrees. Similarly, the difficulties in making national transhumance committees operational in the Sahelian countries and the inherent limitations of the representativeness of these mechanisms and, finally, the change in the perception of transhumance in the coastal countries lead to a stricter and more restrictive regulatory framework for cross-border livestock mobility.

Social cohesion, youth and insecurity

In many contexts, decentralisation processes lead to an over-politicisation of relations between groups of actors who compete for access to political decision-making at the local level. Furthermore, the weaknesses of governance of some local authorities (corruption, clientelism) and their lack of resources can jeopardise the **social cohesion** and the balances necessary to take into account the interests of all and reduce the functionality of local development structures. However, decentralisation and the processes of dialogue and cooperation between cross-border authorities remain an appropriate subsidiarity-based approach to dealing with these complex issues. Overall, it is the articulation of the levels of governance (regional, national, local, cross-border) and the institutional, human, legal and financial capacities at each of these levels that should receive more attention.

Figure 16 Women and pastoralism^{xxxvii}

There is little up-to-date work on the place of women in pastoral systems, even though they are actively involved in livestock production. In pastoral and agro-pastoral societies, the division of labour is based on gender and relies on livestock. Although the latter is managed collectively, it is important to look more deeply into the organisation of the various societies, the property rights of women, their roles in relation to the reproductive health of cows or animal pathologies, and to appreciate the organisation of activities. Many studies suggest traditional mechanisms that discriminate against women who, due to lack of means, are dependent on their parents or husbands to acquire livestock. On the other hand, women have precise knowledge on animal health and reproduction and play an important role in disease control. Their close contact during the milking process means that they are often the first to detect the presence of diseases in the herd and to use traditional medicines. They also control the numerical and weight increase of the herd, as the

availability of milk for the calves depends on them. They participate in livestock related activities, even more so as the men may migrate outside the village in search of paid work to secure or diversify their income.

Women are often in charge of milking and managing the dairy products, the proceeds of which are used mainly to purchase consumer goods. On the other hand, even though owning the animals and often consulted on transactions, they are generally excluded from the sale of animals.

The use of **local conventions** as instruments of **concerted local management** of natural resources (water and grazing) has increased on the ground. However, their application still has many shortcomings insofar as they are applied on a scale that is too small to include transhumant herders in the dialogue on natural resource management. Moreover, most local conventions have only a contractual value, not a regulatory one. They remain therefore non-opposable for third parties (except in Mauritania where the Pastoral Code and the Forest Code attributes them a regulatory value).

Among the ruptures, **generational issues** are particularly acute. The characterisation of the realities of rural youth highlights three major features, namely: the rupture of the intergenerational link felt within families, the non-recognition by the elders of the place of young people and the work they do on family exploitations and, finally, the economic, social and even political marginalisation of rural youth. Young people in pastoral environments are subject to many specific difficulties: exclusion from traditional methods of access to goods, lack of schooling and vocational training, lack of economic prospects, and rejection of the livestock farming profession, which no longer corresponds to their life aspirations, as shown by the surveys carried out by livestock farmers' organisations (APESS and RBM). Young people dream of less arduous, more remunerative jobs within the animal product value chains, on the one hand, and more rewarding activities in the rural environment in connection with the opportunities offered by NICTs, etc., on the other.

Figure 17 The ambivalence of new information and communication technologies^{xxxviii}

The significant achievements in the region in terms of the development of tools for disseminating and sharing information should, however, not lose sight of the disparities that exist in terms of equipment between and within the various countries. In several West African countries, one of the main factors blocking the development of new information technologies is the weakness of the telecommunication infrastructure, which prevents the development of applications and services. In

addition to the physical and technical accessibility of the infrastructure, the appropriation of information and communication technologies (ICT) and the expansion of their uses are also dependent on the income level of the population and their level of education.

The dissemination and use of new ICT in the pastoral environment is more recent and penetration rates remain very low. However, the use of these technologies in a context marked by the geographical dispersion and mobility of pastoral populations is useful for facilitating the movement of animals, the supply of livestock feed and access to markets. Thus, the STAMP project^{xxxix} aims to contribute to improving the resilience of pastoralists faced with extreme climatic events, through the provision of up-to-date information based on geo-satellite data and data collected in the field. This information service, called "Garbal", is accessible from mobile phones by calling a centre managed by a telephone operator. It provides a package of information (availability and quality of biomass, availability of surface water resources, concentration of livestock and market prices) that would give more predictability for the sending of animals on transhumance. Since 2019, the 'Garbal' system has provided advice to pastoralist exploitations, notably information on good animal health practices and financial products adapted to the needs of pastoralists and likely to facilitate access to credit. One of the risks of such a large-scale information dissemination system is that it facilitates all-out access, particularly by large opportunistic herds, to forage reserve areas built on family or friendly alliances aimed at an anticipated but protected reciprocity.

Other interesting experiences include the development of cash transfers by telephone^{xl} (a system negotiated by the POs of Chad with several telephone companies in Chad and Nigeria^{xli}) and the establishment of a Pastoral Alert and Information System (SPAI) in the Ferlo area of Senegal. The purpose of this pastoral resource monitoring system is to support users and local decision-makers in their decision-making processes in order to strengthen the resilience of livestock systems in the face of climate change. It collects, processes and disseminates environmental data (rainfall, biomass, hydrography, bush fires, etc.) and socio-economic data (agriculture, livestock, livestock trade, animal health).

These achievements should not obscure certain more critical points of view on the development of new ICT and their current uses. Objectively, these technologies are primarily used by projects, technical services, NGOs and POs. The question arises as to whether the information disseminated truly integrates the endogenous information systems of pastoralists. Pastoralists rely on systems that are more accurate, detailed and socialised, which allows them to be more useful for livestock mobility and trade. However, these social and personalised pastoralists' information networks are severely handicapped by the weakness of telephone networks in pastoral areas.

Furthermore, it is necessary to include in the analysis the harmful effects of social networks in the dissemination and amplification of violence. Indeed, it is questionable whether the circulation of unverified information, photographs of massacres and accounts of inter-community violence do not constitute a catalyst for the conflicts that are engulfing the territories of the Sahel and West Africa.

In areas that have been plagued by growing insecurity for more than a decade in the Sahel, the younger part of the population is all the more

permeable to the discourse of violent extremist groups as it feels excluded from the social and political system. In addition, insecurity helps to fuel illegal trafficking (arms, drugs, cigarettes, migrants, etc.) developed by mafia and terrorist groups. And conversely, the parallel economy and the money generated by trafficking are used as bait for the manipulation and recruitment of individuals whose living conditions are fragile and young people who have lost their landmarks, including ideological ones.

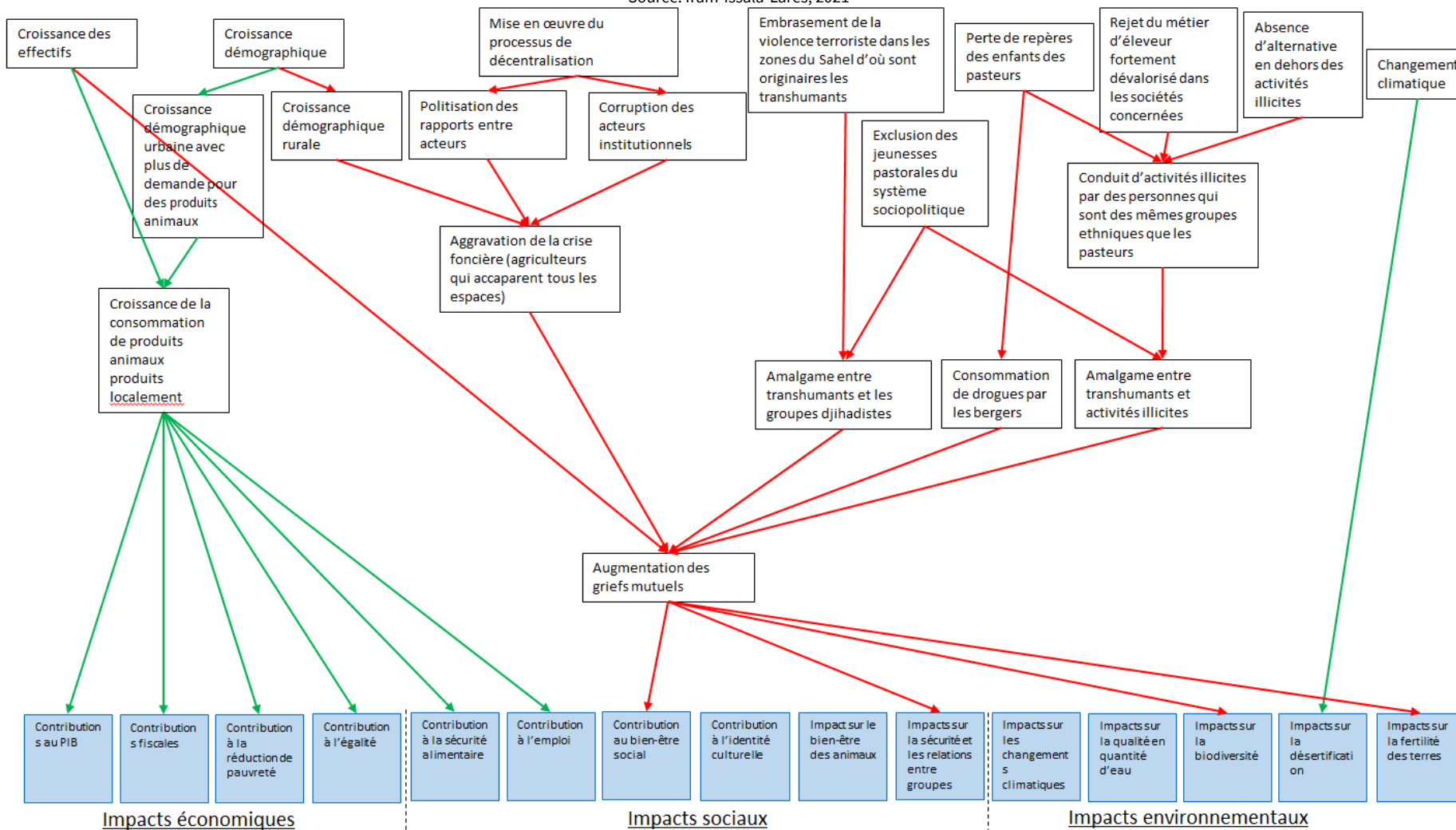
Insecurity particularly affects cross-border areas characterised by a weak presence of public administrations and defence and security forces, which tends to aggravate the phenomenon of livestock theft. The growing insecurity has many repercussions on pastoral communities: deterioration of security conditions, complex restructuring of cross-border transhumance circuits and animal transport routes on foot, closure of many livestock markets that have been the object of terrorist attacks (particularly in Burkina Faso), etc. Herders, and by extension the mainly pastoral communities, are the first victims of endemic crime and armed violence.

Finally, there are strong interrelationships between conflicts over access to natural resources and the current security crisis in some West African countries. The difficulties in finding equitable and sustainable solutions to conflicts encourage identity-based dynamics, which results in the dislocation of social links between rural communities and the weakening of social cohesion. These conflicts often have a collective dimension, which often manifests itself in inter-community clashes. They are sustained by the emergence of community-based self-defence groups. Inter-communal clashes have sometimes led to mass killings in Mali and Burkina Faso - notably the killings in 2019 - and remain common in central Nigeria.

All these factors can be represented in a "**theory of change**" which, based on the work of the study on the economic, social and environmental impacts, makes it possible to visualise the effects of different development trends, or scenarios, depending on the place that mobile livestock systems will take in them.

Figure 18 Evolution of livestock systems, theory of change

Source: Iram-Issala-Lares, 2021



2. The envisaged scenarios

Among multiple scenarios, three scenarios, clearly outline themselves from the trends and uncertainties outlined above based on the thematic prospective notes. The trend scenario prolongs the current situation of gradual deterioration in pastoral practices. The scenario of rupture envisages radical transformations in livestock systems, in particular by the complete cessation of livestock mobility. Finally, the 'accompanied' scenario envisages a controlled transition to develop livestock systems on the

basis of regional complementarities, through support for the modernisation of mobile livestock farming. These scenarios are not forecasts; they aim to explore different trajectories and broaden the vision of possible futures in order to better identify the challenges and levers at a later stage. This section describes in a synthetically the three scenarios that ECOWAS is submitting for debate with national and regional public and socio-professional actors.

2.1 Trend scenario - Pastoralism under tension in a conflictual environment

Figure 19 Synthesis of the trend scenario

TREND SCENARIO	
PASTORALISM UNDER TENSION IN A CONFLICTUAL ENVIRONMENT	
VARIABLES	ASSUMPTIONS
Socio-economic dimensions	Maintenance of pastoral mobility in a context of increasing pressure on resources and competition leading to a multiplication of conflicts Continuous expansion of cultivated or artificial surfaces (3%/year) Continuous growth in animal numbers (3%/year)
Environment and climate change	
Territories, institutions and public policies	
MAIN EVOLUTIONS ENVISAGED AND IMPACTS	
Evolutions in food consumption patterns and the origin of meat products	Market segmentation between imported commodities (by-products/offal, white meat, including pork, and fish) and "quality" products of pastoral origin and partially processed; decline in informal trade in meat products Increasing consumption of processed products and 'out-of-home'
Organisation of livestock value chains	The marketing channels and the jobs generated by the trade on foot are less and less secure and subject to increasing obstacles and harassment The objectives of slaughtering in the Sahelian countries and exporting chilled meat face (i) financing problems; (ii) difficulties in finishing the animals The marketing channels and jobs created by the trade on foot are very partially replaced by slaughter infrastructures in the Sahelian countries in order to expedite the meat through refrigerated circuits, which increases its cost Refocusing local marketing channels on peri-urban production to complement or replace refrigerated meat channels (extra-African imports and of regional origins)
Organisation of livestock systems	Reduction of pastoral mobility, progressive settlement and sedentarisation (fattening units, dairy nuclei) if livestock keepers have access to land, very partial intensification of livestock feeding through fodder production, possibly irrigated in certain Sahelian zones, fodder production in coastal countries and supplementation with agro-industrial by-products) Possibility of stabling through the production of concentrates to compensate for the inaccessibility of fodder resources (South) and the reduction of transhumance Agricultural farms, ranches, fish farms and agropoles favouring the entry of new actors and investors in milk and meat production with increased imports of animal feed, breeding stock and induced fluctuations in the prices of animal products. Remain marginal in terms of contribution to overall production. In the event of land grabbing and in the absence of land tenure regulation, development of conflicts of use between mobile livestock keepers, farmers, local and regional authorities, local tensions over land tenure Intensive systems less resilient to climatic hazards Less productive systems due to fragmentation of rangelands and under-utilisation of resources due to lack of flexibility in response to rainfall variability

<p>Evolution of relations within rural territories, between agricultural and livestock areas, in inter-community relations</p>	<p>Increased fixation of pastoral communities in their home territories while maintaining mobility of animals (and partly of the family)</p> <p>Reduction of inter-community conflicts by stopping transhumance during the dry season and the beginning of the rainy season (south of coastal countries)</p> <p>New routes leading to new alliances and conflicts between mobile herders and farmers</p> <p>Identity-based dynamics within agricultural and pastoral communities, which hinders the emergence of territorial projects</p>
<p>Induced effects at other levels: urban-rural relations, infrastructure and investments, political and institutional dimensions</p>	<p>Rising prices for 'typical' pastoral products increasingly difficult to acquire</p> <p>Expensive investments in irrigation (fodder production), access to animal feed, refrigerated slaughter infrastructure, and refrigeration transport equipment</p>

While pastoral mobility is maintained in view of its productive advantages, the trend towards increased conflict that accompanies it characterises the baseline scenario. Such a trend scenario can be described, in addition to the table, by the elements below.

Segmentation of demand and markets for meat products

With growing food demand and changing urban consumption patterns that rely increasingly on processed and 'out-of-home' products, the market for meat products tends to be segmented according to eating habits, income levels and lifestyles.

Figure 20 Distribution that would adapt by 2040^{xliii}

Distribution is accompanying an urban demand that is increasingly demanding in terms of health and price. Butcher's shops are thus gradually moving away from the traditional stalls of the large African markets. Although they are far from all having a cold room, the equipment for cutting and presenting the meat increasingly meets international standards, at least in the capitals. In the capitals and certain secondary towns, the development of supermarkets with their refrigerated butchery and dairy product departments is undoubtedly the most interesting to follow in the years to come. The volumes transiting through their channels have exploded. For example, in Senegal, large international brands have developed their network of mini-markets. The effect of this is both a professionalisation of the sector, respect for the cold chain, the development of new trades (cutting in butcheries), and heightened competition between products, which drives down their price. At the same time, this evolution could make small artisanal butchers more vulnerable. Finally, the development of fast-food restaurants and fast-casual restaurants is leading to an increase in demand for minced meat in competition with chicken. The temptation to import this beef is great (importing frozen meat), which weakens the strategic position of local meats.

On the one hand, 'basic' products rely on the increased imports of white meat (and fish), while on the other hand, products from mobile livestock farming tend to move into, in addition to imported red meat, 'quality' products that meet the demand of the middle classes with increasing purchasing power. Nevertheless, under the current

conditions, the competitiveness of meat from mobile livestock systems is maintained.

Refocusing marketing channels on peri-urban production

The organisation of the value chains is changing. Given the obstacles to mobility, particularly across borders, the live trade is gradually being replaced by slaughter infrastructures in the Sahelian countries and the dispatch of meat to coastal urban consumption centres via refrigerated circuits. This partial reorganisation of marketing channels reduces employment, particularly for young people, induced by the accompaniment of herds and increases the cost of red meat, which is directed towards 'quality' channels. At the same time, in order to meet the demand for more accessible meat products, peri-urban livestock farms are developing as a complement to imports, and marketing channels (milk, meat) are refocusing on these productions. Their competitiveness is very sensitive to the volatility of prices of imported intermediate inputs (cereals, oilseeds, veterinary products, energy, etc.), as well as to border protection policies on these inputs and to sanitary measures.

Figure 21 Transport and slaughter of animals^{xliii}

The problem of conveyance of animals or meat is a recurring one in West Africa. Should animals be conveyed on foot, by truck or by train? Should one slaughter in the Sahelian countries and transport meat to the coastal capitals? Faced with increasingly restrictive mobility conditions as the journey southward progresses, the traditional method of transporting beef to coastal urban markets by foot is being questioned by politicians, who compare it unfavourably with the rapidity of transporting live animals by truck and, for some years now, the interest in turning to transporting meat by refrigerated trucks (with no significant results to date). However, despite the many obstacles it faces, transport on foot remains a dynamic practice, because it is very efficient from a zootechnical and economic point of view. This type of transport allows young animals to complete their growth and fatten on the way. As an alternative, transport by lorry, which is faster, is now widely preferred. However, road transport capacity is limited by the state of the infrastructure (the same applies to trains) and the limited availability of suitable trucks. This results in high transport costs (little return freight) which must also include additional costs linked to roadblock bribery. In addition, the transport of animals from Sahelian countries to coastal capitals is generally done by combining the two modes of transport. Generally speaking, exporters favour the securing of transport (safety, speed, reduction in weight loss and stress, elimination of load breaks with the obligation to unload, water and feed the animals en route). Given the value of the shipments, the cost of transport (all inclusive) has little impact on the final consumer price.

The prospect of setting up refrigerated slaughterhouses in the Sahelian countries is also to be nuanced. The creation of well-paid specialised jobs is opposed to the possible disappearance of a multitude of small trades. The added value in the Sahelian countries is countered by the loss of this added value in the coastal slaughterhouses and the cost and risk of transport in refrigerated trucks. In any case, today it is undeniable that the share of the chilled meat trade in this scenario will remain relatively small compared to that of the live animal trade.

The increasing attention paid by national and sub-regional institutions to the problem of transporting livestock from Sahelian countries to the consumer markets of coastal countries will be decisive for the competitiveness of the Sahelian meat sector in a context of strong growth in urban demand, low consumer purchasing power and competition from other sources of animal protein (fish, chicken, pork, imported red meat).

Reduction in pastoral mobility, progressive sedentarisation

All of these developments are accompanied by a reduction in the mobility of pastoral livestock. This is reflected in the transformation of partially fixed or sedentary livestock towards peri-urban dairy farms or more specialised fattening workshops. Both trends presuppose access to land for livestock farmers, including in peri-urban areas, and investments to intensify fodder production per hectare (through irrigation and fertilisation,

particularly in Sahelian areas). Both increase competition with agricultural uses.

In coastal countries, the loss of access to pastoral resources implies a twofold movement towards the stabling of animals, involving the production of fodder and cereal and protein crops for the production of livestock feed on dedicated areas, and above all in the crop rotations of farms. This trend accompanies the gradual emergence of new agri-livestock, ranching and aquaculture enterprises. The movement reflects the entry of new actors and investors, both urban and foreign, into meat and milk production, particularly on the basis of production models that use imported feed and (reproductive) animals to supplement local fodder production (particularly protein supplements). This growing recourse to imported supplies leads to greater volatility in product prices from the world market and, as a result, to fluctuations in the prices of animal products available on the domestic market.

Due to the lack of mobility and the stabling, the intensive systems are more susceptible to climatic disruption, drought and rising temperatures, as well as to emerging (epizootic) diseases and the zoonoses that accompany them. Mobile livestock systems tend to lose productivity due to the fragmentation of rangelands and the under-utilisation of resources that this has led to. This loss of flexibility due to barriers to mobility limits the necessary adaptation to spatial variability in rainfall.

Land conflicts that tend to exacerbate

These trends in the evolution of production models increase local tensions over land. In the Sahel, conflicts of use between pastoralists and farmers persist over pastoral land and biomass. Nevertheless, new grazing areas are emerging in order to adapt to the closure of certain areas. While inducing new alliances, this also leads to new conflicts between farmers and herders. At the same time, new land conflicts are emerging between urban sprawl and peri-urban agricultural and horticultural activities and, finally, the growing influence of cattle ranches^{xliiv}. The growing influence of private ranches, whose barbed wire delimitates hundreds or thousands of hectares, is a major source of 'new conflicts'.

Identity-based dynamics within farming and herding communities

The agricultural sprawl of pastoral areas reduces the movement of pastoral communities, who move less during transhumance and tend to settle in their home territories. In addition, the reduction

of long cross-border transhumance journeys for the purpose of marketing livestock between the end of the dry season and the beginning of the rainy season limits relations between farming and pastoral communities. These different community-based, if not identity-based, folds, hinder the emergence of more inclusive territorial projects between the different communities.

2.2 Scenario of rupture - Abolition of transhumance and a retreat of livestock policies to the national space

Among the 'silent' transformations that are observed, some may result in particularly strong movements. These moments provoke important and brutal changes, 'ruptures'. They are driven by the development and expansion of new phenomena, in particular the increasing complexity of conflicts against a backdrop of terrorism, of which mobility is often perceived as one of the vectors. The resulting ruptures are part of the slower and deeper transformations that constitute the 'soil' in which they take root. The conditions for the emergence of these transformations are identifiable and constitute the foundations of a so-called rupture scenario, the

modalities of which remain uncertain. This scenario is characterised by a rupture with the history of livestock farming in West Africa, which made of this region a truly integrated system of production and exchanges. In contrast to a vision based on growing regional integration, this scenario favours uncoordinated national approaches to livestock development strategies and the reduction of dependence on regional and extra-African imports.

In addition to the table, the main transformations envisaged are described hereafter.

Figure 22 Synthesis of the rupture scenario

RUPTURE SCENARIO	
TOWARDS THE SUPPRESSION OF TRANSHUMANCE AND A WITHDRAWAL OF LIVESTOCK POLICIES IN THE NATIONAL SPACE	
VARIABLES	ASSUMPTIONS
Socio-economic dimensions	Adoption of national livestock policies based on self-sufficiency
Environment and climate change	
Territories, institutions and public policies	
Stopping pastoral mobility	
Sedentarisation of transhumant herds, and ranching	
MAIN EVOLUTIONS ENVISAGED AND IMPACTS	
Evolutions in food consumption patterns and the origin of meat products	Substitution of red meat with poultry and fish from industrial systems and imports Growing consumption of processed and 'out-of-home' products
Organisation of livestock value chains	Increased imports of industrial livestock feed and frozen meat Taxation favourable to imports of milk powder and meat Collapse of traditional local and regional supply chains Rising prices for animal products
Organisation of livestock systems	Crisis in pastoral and agropastoral livestock systems Emergence of agricultural farms, ranches, settlements for livestock farmers, aquaculture farms and agropoles emerge without a real perspective of insertion into the national and regional economic fabric Attempts to invest in local milk and meat production with increased imports of feed, breeding stock High exposure to external shocks, notably to induced fluctuations of prices for animal products Intensive systems less resilient to climatic hazards,

	<p>Less productive system due to under-use of resources accessible through mobility, feed costs for producing animals and the breeding herd</p> <p>Strong competition for natural resources, especially grazing areas by local livestock with risks of overgrazing due to lack of large-scale transhumance, land and water resources</p>
<p>Evolution of relations within rural territories, between agricultural and livestock areas, in inter-community relations</p>	<p>Crisis in pastoral and agropastoral communities</p> <p>Crisis of rural employment in agropastoral areas and of the traditional trade in pastoral products,</p> <p>Reorientation of young agropastoralists to agropoles or intensive farms or move to cities in search of urban jobs</p> <p>Loss of connections between sedentary agropastoral systems and mobile pastoral systems (provision of young animals, 'lodging' of injured or sick animals, herd renewal, entrustment for marketing, manure contracts)</p> <p>Decline in employment, women's economic income and increased economic migration</p>
<p>Induced effects at other levels: urban-rural relations, infrastructure and investment, political and institutional dimensions</p>	<p>Decay of the social fabric in both rural and urban areas</p> <p>Investments in port infrastructure, refrigerated circuits and mass distribution</p>

Substitution of red meat by 'industrial farming' and imports

The trends observed in the evolution of consumption remain the same, but the cessation of mobile livestock accelerates a double movement of increase in imported products and development of local industrial production oriented towards short-cycle species, supported by state policies and a macro-economic environment favourable to imports.

Figure 23 New livestock farmers and state investment plans^{xlv}

The 'new livestock farmers' are particularly targeted by state programmes to promote dairy intensification or, now, by industrial dairies. The operation to import over 1,000 heifers into Senegal in 2017 illustrates this trend. It mainly affected intensified producers in the Niayes, near Dakar and Thiès, which Siagro (Kirène-Candia) wishes to collect in the future. A second operation on the same scale was carried out in 2019. Some large dairy farms have also been developed in Nigeria and Côte d'Ivoire. A dairy agro-industrial complex is under study in Toumodi. These large farms sell all or part of their milk to dairies or sell under their own brand. Several dozen small farms are also established around Bamako in Mali, Ouagadougou and Bobo Dioulasso in Burkina Faso, Niamey in Niger, Ndjamena in Chad and Nouakchott in Mauritania. In the future, the development of collection by industrial units should reinforce the growth of this production system.

States are also listening to the ranching option. While ranching is an element of the solution to the problem of increasing meat supply, it is not necessarily a miracle solution. The formula is possible on an ad hoc basis, but difficult to envisage on a large scale as a unique response to the need to increase meat supply. The current experience of Nigeria is, in this sense, significant. The country has expressed a desire to limit mobile grazing in order to limit conflicts between farmers and livestock farmers. The 'Livestock Transformation Plan' provides for the development of regulated grazing areas. Some states, such as Benue State in southern Nigeria, even have a policy of promoting ranches and banning pastoral livestock.

Ranching, conceived as an enclosed and privatised area of grassland, can be established where the conditions are right (including in conjunction with intensive fattening systems), while complementing transhumant livestock farming, whose inputs remain essential for final consumers but also for the residents of the host areas.

On production-oriented ranches, the questions lie elsewhere. More meat can certainly be produced on a ranch, but where, at what price and for which markets? Space availability, admissible animal loads and the number of heads that can be marketed each year remain part of an ever-challenging equation. The ranch must provide heavy animals. This means reducing the financial burden, taking advantage of economies of scale and controlling the most critical risks. In terms of profitability, the ultimate judgement will be made by market conditions and the behaviour of consumers, who are often more interested in the price of the meat than in its quality. In its relationship with livestock farmers, *ranching* must also know how to balance profitability with social responsibility.

Imports of frozen meat, but also of inputs and animal feed (needed for intensive seed/breeding, protein cakes, concentrated livestock feeds, veterinary products, etc.) are increasing sharply, with an impact on the trade balance.

Figure 24 : Importing feed?^{xlvi}

To avoid tensions on local feed production, the solution is often to import feed (cereals and soybean meal). Many countries producing milk and meat, both white and red, rely on these imports, especially in Europe. Burkina Faso is seriously considering this recourse to supply its feed factory in Koubri. However, it is legitimate to question this solution. Dairy policies aim to limit imports of milk powder. Is it reasonable to limit one import by increasing another? Probably not, from the point of view of regional autonomy; perhaps from the economic point of view, but the profitability of such an operation remains to be proven for milk (and soon for red meat?) that is destined for a mass market at low cost.

This movement is accompanied by significant investment needs, particularly in port

infrastructures, cold chains and mass distribution. In return, these investments accelerate the rupture by broadening the material conditions of the transformation (imports, distribution) and by opening up markets to livestock companies.

In addition, the Common External Tariff (CET) remains unchanged and continues to favour imports of milk powder (see below). As a result of their low productivity, the local supply chains are collapsing, thus reinforcing dependence on imports of food products of animal origin.

Deterred pastoral systems

More broadly, this scenario directly stages the disappearance of mobile, pastoral and agropastoral livestock systems. Motivated by the increasing conflicts observed in the trend scenario, decision-makers would actively implement policies to ban cross-border transhumance and grazing in many open areas^{xlvii}.

Figure 25 Sedentarisation policies for pastoral livestock^{xlviii}

Pastoral livestock sedentarisation policies, sometimes presented as policies to fight against livestock 'divagation', are not new and have resulted in failure or have not been effectively implemented, as in the case of the GIZ-supported Pastoral Self-Promotion Project in the Ferlo (PAPF) in Senegal. On the other hand, this remains a policy envisaged in several coastal countries, in particular by Nigeria's *National Livestock Transformation Plan*, despite the major role (80%) played by pastoral livestock in the country's animal production (ruminants). This is also the case in Benin, which has for several years shown a desire to sedentarise its livestock while prohibiting the entry of transhumant herds from neighbouring countries. Benin is actively negotiating funding from regional donors, in particular BOAD, to launch its sedentarisation project^{xlix}.

On the other hand, these areas are increasingly occupied by agricultural enterprises, livestock ranches and agropoles, whose development is undergoing a new boom as a result of increased investment opportunities (higher agricultural prices, easier access to land, tax incentives, etc.) within the framework of 'emergence policies' in the agricultural sector.

Sensitivities to the volatility of international prices and vulnerabilities to climate change will increase in relation to the previous scenario. These hazards are reinforced by the under-utilisation of forage resources linked to the reduction, if not the end, of animal mobility. This is accompanied by increased

overgrowth of these areas, which increases the risk of accidental fires.

A growing crisis in pastoral societies

The crisis of pastoral and agropastoral societies that accompanies these major transformations of livestock systems has different dimensions. The connections and interactions between agricultural systems, sedentary agropastoral systems and pastoral animal mobility are coming to an end, whether in terms of the supply of young animals, the functions of 'lodgers' to guard injured or sick animals, the renewal of herds in the event of high mortality, conveyance for marketing on foot, manure contracts in exchange for grazing, etc.

Rural employment, especially of young people (herders) and women (processing), is in sharp decline in agropastoral areas. While some young people seek employment in agropoles or as herders on ranches, most move to the cities in search of jobs to survive^l. The rural exodus accompanies the decline in rural employment, the reduction in women's cash income and increases economic migration. Social cohesion is weakened, both in the city (underemployment) and in rural areas.

2.3 Accompanied scenario - Towards an integrated regional livestock system

The third scenario has two major characteristics: (i) it relies on intra-regional dynamics and complementarities; (ii) it is based on a proactive policy that relies on a compromise between states and between stakeholders. It borrows from the evolutions of the two previous ones (control and management of animal mobility, diversification of livestock systems) but accompanies them with measures and innovations to strengthen social acceptability ('pacified transhumance'), while modernising practices on the basis of intensification to control the increase in numbers and improve productivity to better meet demand on the basis of economical systems. Its fundamentals are based on a shared vision, built around the 'common ground'^{li} that transhumance represents and founded on a set of practices supported by accompanying measures, support and investments coordinated between different areas and on interlocking levels: regional, national and local. It is based on a vision of a 'regionally integrated productive system'.

Figure 26 Synthesis of the accompanied scenario

ACCOMPANIED SCENARIO	
TOWARDS AN INTEGRATED REGIONAL LIVESTOCK SYSTEM	
VARIABLES	ASSUMPTIONS
Socio-economic dimensions	Coexistence and local and regional complementarities between agricultural and pastoral activities around a pacified and modernised transhumance
Environment and climate change	
Territories, institutions and public policies	
MAIN EVOLUTIONS ENVISAGED. AND IMPACTS	
Evolutions in food consumption patterns and the origin of meat products	<p>Persisting demand for local products: quality certification, adapted (import) fiscality, organisation of exchanges, support for entrepreneurs</p> <p>Controlling the price of local products,</p>
Organisation of livestock value chains	<p>Strengthened control of cross-border herd mobility, administrative facilitation of border crossings,</p> <p>Investment in conveyance and transhumance routes ;</p> <p>Capacity building of trade actors (training, support mechanisms)</p> <p>Favourable environment, investment and professionalisation of the local milk value chains</p> <p>Increased use of digital technologies to support mobility: information, payment (mobile banking), trade, price and flow monitoring</p>
Organisation of livestock systems	<p>Mobility maintained but 'pacified' and secured by laws, pastoral land codes and local charters, good management of collective infrastructures (pastoral water, vaccination parks, feed distribution systems, livestock markets, resting areas, etc.) .)</p> <p>Encouraging fodder production to compensate for declining forage resources and overgrazing</p> <p>Setting up the right conditions for a concerted management of biomass and manure</p>
Evolution of relations within rural territories, between agricultural and livestock areas, in inter-community relations	<p>Stronger integration of agricultural and pastoral production systems, through the establishment of adequate and consensual land-use plans</p> <p>Reduction of inter-community conflicts through the establishment of conditions for the temporary settlement of animals and transhumants during part of the agricultural campaigns</p> <p>Harmonious development of rural areas through :</p> <ul style="list-style-type: none"> • Proactive policies for the development and rational management of natural resources, • Organisation of mobile court hearings that include livestock farmers • Facilitating access to public services, social protection, school canteens, bridge schools, mobile schools, • Strengthening of economic exchanges between pastoralists and farmers (reception of herds after harvest, etc.) <p>Facilitating access of livestock farmers to productive resources (in particular land, water) and to vocational training in animal product value chains</p>
Induced effects at other levels: urban-rural relations, infrastructure and investment, political and institutional dimensions	<p>Increased economic exchange between pastoral and urban areas</p> <p>Investments in infrastructure (access roads, and trade and milk collection infrastructure), conveyance and transhumance routes: corridors, watering points, veterinary posts and buffer corridors, loading docks for trucks; capacity building for trade actors (training, support mechanisms)</p> <p>Proactive policies to support mobility management and trade in local products</p> <p>Decentralisation and recognition of the representation of transhumant groups in the markets or in the municipalities (<i>ruga</i> or other 'local ambassadors')</p>

Figure 27 The concept of a regionally integrated production systemⁱⁱⁱ

When we speak of a regionally integrated production system, this implies that the movement of the herd is part of a livestock process that will allow the animals to be finished gradually, possibly by providing targeted feed supplements for the animals that are to be marketed, from the start of the transhumance to their arrival, which is often more than 1,000 km away, on the markets of coastal countries. The animal, the property of the pastoralist livestock breeder, sold in Abidjan, Lagos or Accra is therefore a product linked

to a regional territory and resources, and not only to the Sahel. This notion of an integrated regional production system is not only valid for animals born in the Sahel and slaughtered on the outskirts of coastal cities, but also makes sense in the farming-livestock systems that are rapidly developing in the south of Sahelian countries-north of coastal countries. During the rainy season, the herds kept by these agro-pastoralists are often entrusted to a shepherd who goes to the pastoral areas to free up the land for cultivation.

In view of the major trends in food consumption patterns, the measures are part of a food sovereignty policy designed to strengthen food systems at the regional level^{liii} and are intended to support demand for local products. The actions to be envisaged accompany the overall diagnosis of the regional food system, and include, among other things: border taxation (revision of the CET); the organisation of coexistence and complementarity of activities, marketing and support for livestock value chains, agricultural intensification to limit the extension of cultivated areas and to have cereals and protein crops available for animal feed, and measures for payments for ecological services in order to encourage environmental practices via social safety nets

Figure 28 Coping with import competition^{liv}

Regional integration and international trade liberalisation policies have encouraged the reduction of customs duties in the ECOWAS zone. Economic integration within large regional groupings has notably led to the elaboration of "Common External Tariffs" (CET) providing for the progressive convergence of customs duties between countries. ECOWAS has thus defined 5 categories of products whose import tariffs vary from 0 to 35%. The tariffs applied to animal products (milk, meat) have been set at very low levels, so as to favour access to food for urban populations. This gradual harmonisation also allows for the implementation of internal free trade areas within the customs union or, in the long term, on a continental level (AfCFTA^{lv}).

These policies aim to favour imports to meet urban demand. This trend is illustrated by imports of meat and dairy products. In 2020, ECOWAS imported 39% of its chicken consumption, 12% of its pork consumption and 3% of its beef consumption^{lvi}. In Côte d'Ivoire, poultry meat imports have been slowed down since 2005 by measures to limit imports, in order to accompany the emergence of a local sector. This is also the case in Nigeria, which prohibits the import of non-African or non-certified red meat, an eminently important measure for the entire West African sector given the weight of this country in the trade. If the ECOWAS zone imports very little red meat in 2020, the import ban measure constitutes a determining variable in the future of mobile livestock systems.

The world market now offers many opportunities with the exporting markets of Australia, India and South America. Thus, imports of buffalo meat (Indian origin) into Senegal and, more broadly, imports of bovine offal have increased in the 2010 decade. However, the threat comes first and foremost from competition from imported white meat such as chicken, whose level of consumption continues to increase, due in particular to low prices, an adapted distribution network and consumer behaviour (substitution between animal products).

In the milk sector, local production competes with blends of skimmed milk powder re-fattened with vegetable fat, mainly of European origin. This blend, which is very lightly taxed by the CET, sells for up to 30% less than local milk on West African markets^{lvii}.

These measures can be extended to policies favouring the consumption of animal products of local origin in collective catering or based on quality signs (certification, labelling, indications of local origin, etc.).

Coexistence and local and regional complementarities, agricultural and pastoral and between Sahelian and coastal areas

The development of livestock farming is accompanied by increased exchanges between pastoral and urban territories. The actions that reinforce the scenario support the coexistence of the different systems and activities in an appropriate way, whether it is a question of land occupation (pastoral land code, organisation of passage corridors and herd watering points) or support for 'good practices' and organisations that reduce conflicts at local level (pastoral charters, etc.).

Figure 29 Reducing conflict through seasonal stabling^{lviii}

An alternative to conflict during harvest periods is to reduce mobility through stabling. Cattle in stalls (stables or pens) are fed at the trough with large quantities of collected and preserved fodder such as hay, leguminous crop stalks (cowpeas, groundnuts, voandzou), cereal stubble or agro-industrial by-products (cottonseed, oilcake, molasses...). This trend is already present in pastoral livestock systems facing severe restrictions on access to rangelands in the dry season. As a result, the seasonal and regional mobility of herds is reduced, leading to a reduction in year-round forage resources and a risk of overgrazing and degradation through invasion by species rejected by livestock, such as *Sida cordifolia* in the Sahel or *Hyptis suaveolens* in the sub-humid savannahs, which are already common in areas where livestock is concentrated.

This development contributes to the strengthening of complementarities between agriculture and livestock (horizontal transfer of fertility, biomass, manure), which allows for an improvement in the productivity of both livestock and agriculture. In addition, actions strengthen the management of the infrastructure necessary for livestock (pastoral hydraulics, vaccination parks, feed distribution systems) and its mobility.

Figure 30 Marketing channels that adapt^{lix}

Trade in pastoral and agro-pastoral livestock takes place over very long distances (several hundred km) linking the most isolated Sahelian areas to the capitals of coastal countries. The marketing of livestock is based on a network of spatially dispersed but closely interwoven markets. Their level of equipment varies according to their position in the grouping and the conveyance of animals. Markets with functional loading docks are strategic. In recent years, several cross-border markets have been equipped with them, giving traders more latitude for transport by truck solutions.

These new or rehabilitated market facilities show the capacity of the livestock sector to adapt to the challenge of conveying more and more animals while risks and crises have multiplied in recent years. Restrictions on mobility, climate change (increase in extreme shocks), economic crises (fluctuations in the exchange rate between currencies in the ECOWAS zone), health crises (Ebola, Covid-19), political crises (coups d'état in Mali, Burkina Faso, Côte d'Ivoire, Guinea) and now the security crisis, are all obstacles that constrain the value chain. However, the sector remains operational and efficient thanks to its dynamism and its ability to find and secure new transport routes. No terminal market has experienced a flagrant deficit over the last 20 years^{lx}. In fact, the strength of the livestock trade lies in the network of routes (on foot, by truck or by train) linking the production areas of the Sahelian countries and the coastal countries to the consumption areas (particularly the capital cities).

At the same time, the dairy sector is also supported through measures to make it more attractive, to support the necessary investments in collection and processing equipment, feed supplementation, product safety controls and the professionalisation of its actors.

Support for mobility management and local trade

The measures support mobility, which facilitates regional trade, from Sahelian production areas to coastal urban markets. The conveyance of animals on foot is supported through the facilitation of border crossings (pastoral certificate, reduction of formal and informal barriers, etc.) and investment in the infrastructure necessary for conveyance and transhumance circuits (corridors, mesh of watering points, veterinary posts, holding corridors and pens, loading dock for transport by truck, etc.).

However, the 'local milk' sector remains unbalanced in relation to the demand^{lxi}.

Figure 31 Dairy production still poorly connected to the market^{lxii}

Given their animal numbers, it appears that Mali, Chad, Niger, Mauritania and Nigeria are potentially the largest milk producers in the region. For cow milk alone, these countries would each produce between 300 and 500 million litres of milk per year. Senegal, Guinea, Burkina Faso and Benin are in an intermediate situation with a total milk production of between 150 and 200 million litres of cow milk. The other countries produce less than 100 million litres per year. At the ECOWAS level, total milk consumption is increasing faster than production. As a result, the share of imports of dairy products is increasing. Moreover, it is primarily these imports, particularly of milk powder, that enter the formal and commercial circuit. Less than 5% of the milk produced is collected by dairies. This figure is certainly rising with the efforts made over the past 20 years in milk collection, particularly in the Sahelian countries. But there is still a long way to go before it becomes truly significant.

Support is provided for the professionalisation of the various links in the livestock value chains (supply, processing, packaging and marketing). It strengthens the capacities of trade actors through training programmes and support and advisory services. In addition, seasonal stabling solutions are developed which, combined with the production of fodder, make it possible to compensate for the reduction in pastoral areas and overgrazing while reducing the risks of conflict during the agricultural campaigns.

Figure 32 Producing feed on a regional level^{lxiii}

For forage crops, technical solutions exist but adoption in the field remains low, even in coastal countries. Their cost is often prohibitive for livestock farmers. There is also a problem of competition (land and water) with crops for human consumption. For example, the states of the sub-region prefer to support irrigated rice crops rather than develop forage crops for dairy cows.

For concentrated feeds, West Africa has several local raw materials from the agri-food industry: cereal husks and bran (rice, wheat), cotton seeds, oil cakes (cotton, groundnuts), brewery grains, tomato residues, and sugarcane molasses. But the volumes available are limited and access to them is sometimes difficult. How can intensification of milk production or cattle fattening be envisaged under these conditions? Should soybean cake be imported to limit milk powder imports? What would be the economic and social interest at the West African level to develop certain cereal or oilseed sectors? How could the sale of surpluses from certain coastal countries be directed towards inland countries? The answer to these questions requires the implementation of a strategic reflection in this sector both at the regional level and in each of the states. This reflection must be based on three major points. The first point concerns the limited supply of agro-industrial by-products in the ECOWAS zone. The pressure on demand for by-products results in relatively high and variable prices over time, which does not encourage the development of intensive livestock farming. Indeed, feed costs represent on average more than 50% of production costs. However, in areas with high agricultural potential (irrigated areas, cotton-growing areas, groundnut-growing areas), many agricultural and industrial by-products are available for the intensification of animal production. For example, animals benefit from by-products from the processing of rice, cotton, groundnuts, tomatoes and sugar cane. The second point concerns the prioritisation of animal production at the regional and/or national level. Today, agro-industrial by-products are largely exported outside the ECOWAS region, and those that are available locally are used primarily for sheep and cattle fattening, poultry (especially in coastal countries) and to safeguard livestock during the lean season (especially in Sahelian countries). Using more feed to boost milk production will therefore require choices to be made in favour of local production, and to arbitrate between milk and meat. These choices will be difficult, as meat production currently concerns a large proportion of the rural world (including those producing milk). The conceivable solution is to produce more agro-industrial by-products in the short or medium term. The third point concerns the possibilities of producing cereals for animal feed locally. Demographic growth in the ECOWAS zone is accompanied by an increase in the amount of agricultural

land under cultivation. This development is often to the detriment of grazing land, but sometimes to the benefit of better integration of agriculture and livestock. But these positive perspectives for the development of livestock production have their limits. Indeed, cereals are never exclusively produced for animals. The food competition is systematically decided in favour of human food. It is a question of food competition and the sharing of particularly coveted land.

The most immediate solution is undoubtedly the regional management of agro-industrial by-products. In other words, it is a matter of redirecting extra-African exports from coastal countries to Sahelian countries. This concerns in particular cotton seed and cake from Côte d'Ivoire and Benin, and sometimes groundnut cake in Senegal. However, it is important to be aware of the partial nature of this solution. On the one hand, there is little room for manoeuvre: the quantities exported are limited and will not by themselves cover the future needs of intensified animal production (chickens, fattening, milk). On the other hand, through the export of oil cakes, agro-industries find solvent and often profitable markets. It is possible to envisage national or regional quotas or taxes to limit these exports, although such measures would be contrary to the spirit of the trade agreements in force. However, strategic sectors such as West African cotton, which are already experiencing a difficult decade, should not be jeopardised. Finally, while the development of trade in livestock feed is an absolute necessity to support the future intensification of milk and meat production in West Africa, it will not be enough on its own to solve the problem of feeding ruminants in the dry season. Concentrated feed is only a supplement to the basic ration, which is forage. Even if the situation seems less critical in agropastoral or Sudanese areas, the additional constitution of stocks is unavoidable. Technical solutions exist (hay, silage), although they are still not widely used and are expensive. It is also necessary to think about irrigation for green cuts, as can be seen today on dairy farms near Ouagadougou or Bamako, or in the area of the Berger dairy (northern Senegal), which favours the distribution of green sugar cane in partnership with the Compagnie Sucrière Sénégalaise. These solutions obviously require support and better training for producers (increased technical skills and cost control).

Innovations, particularly in digital technologies, accompany the securing of mobility through information sharing, payment mechanisms or price and flow monitoring systems.

Responsible governance and recognition of pastoral groups

Pastoral and agro-pastoralist groups are supported in their professionalisation (advisory support, access to veterinary services, purchase of animal feed and veterinary products, credit, marketing of milk and livestock, etc.). Economic exchanges between farmers and herders are encouraged (reception of herds after the harvest, manure contracts, production of forage in the hosting areas) and inclusive governance of natural resources is supported at the local level^{lxiv}.

Recognition and support for livestock practices helps to secure the lives of pastoralists in their home territories and pastoral areas; it encourages the harmonious development of inclusive rural territories for pastoralists. This is based on mediation^{lxv} or mobile court hearings open to herders (access to public services, social safety nets, school canteens, etc.) and adapted innovations in the delivery of public services (mobile schools, relay schools, etc.). The understanding and rigorous and equitable practice of agro-pastoral law is largely reinforced at the level of herders' and farmers' POs, as well as for the target actors of local governance of agro-pastoral areas traversed by transhumance: local customary authorities, elected officials of decentralised authorities (municipalities and regions), police and gendarmerie forces, legal services, NGOs, etc.

Figure 33 Initiatives that create social links in the territories and include pastoralists^{lxvi}

In order to help guarantee the rights of pastoralist communities, herders' organisations have recently undertaken extensive advocacy campaigns with the support of some international NGOs and human rights associations, in order to draw the attention of public authorities. For example, in 2015, a group of herders' organisations in Niger launched the "Let's save pastoral land" campaign, based on a roadmap with several actions (compensation for herders who have lost their land rights, inclusion of the pastoral dimension in environmental impact studies prior to the implementation of projects with a strong impact on land, an audit of land titles granted since 2010, and the diligent adoption of texts implementing pastoral legislation).

Social protection is another avenue for inclusion of the most vulnerable pastoral populations. West African countries have formulated their resilience priorities (PRP-AGIR), taking into account some of the concerns expressed by pastoral communities in terms of strengthening social protection. Operationally, they have established social safety nets that are both social protection and resilience building instruments. Such instruments have two important advantages. On the one hand, they provide a minimum income to vulnerable individuals and/or households, but also facilitate their minimum access to essential services. On the other hand, they are built on the principle of respect for the rights of beneficiaries. In several Sahelian and West African countries, preventive and regular cash transfers, as well as conjunctural or seasonal transfers, are being put in place, in conjunction with the definition of national social protection policies. At the regional level, social protection approaches are being developed by several ECOWAS fora with the support of the FAO and the World Bank ('Registre National Unique'). Thus, the Department in charge of Agriculture, Environment and Water Resources is working to develop social food security nets through PRIASAN, which constitutes the framework for the operationalisation of its interventions and whose lines of action include, among others, the AGIR / Resilience process, the establishment of the RRSA and the support programme for social food security nets. At the same time, the Department of Social

Affairs and Humanitarian Action, in partnership with UNICEF, has initiated the process of developing a region-wide social protection strategy. The scope of these advances resulting from the efforts undertaken by these two regional governance bodies is diminished by the low level of consultation and coordination of the initiatives undertaken. Some progress has been made in this direction through the launch of pilot initiatives aimed at developing social safety net models adapted to the realities of the pastoralist livestock system. The capitalisation of innovations tested in the framework of certain ongoing interventions^{lxvii} should allow for feedback on the conditions for success and replication of experiences, with a view to scaling up.

Herders are represented in communal and local fora and herdsmen's professional organisations are strengthened, both locally (*ruga*^{lxviii} or 'local ambassadors') and at national and regional levels. POs participate in consultations in the evaluation and elaboration of public policies on pastoral mobility^{lxix} and are involved in the definition of investment programmes and their implementation.

Figure 34 Managing transhumance in the face of rising conflicts in Benin^{lxx}

Faced with the rise in conflicts, Benin has long relied on transhumance committees structured at various levels: local-village, municipal, departmental, and national. They were established by inter-ministerial decree (1992 & 2016) with the aim of supporting the regulation of transhumance and facilitating dialogue and collaboration between the different actors (farmers and pastoralists). Amicable settlements should be favoured to promote cohabitation between farmers and livestock breeders and thus avoid the breakdown of social ties. These committees organise consultations and sensitisation of transhumance actors

before the start of transhumance, especially in areas of tension. But, generally speaking, at village level, these committees are much more in demand during conflicts between farmers and livestock breeders. In reality, these committees do not really have the technical and financial means to fully carry out their missions.

At the legal-institutional level, the country sets and communicates (by ministerial decree) each year the entry points for herds, the routes, and the start and end dates of transhumance. To remedy the limited functioning of the transhumance committees, the pastoral code provides for a more permanent institution that would coordinate transhumance management actions on a full-time basis throughout the national territory: the Agence Nationale de Gestion de la Transhumance (AGNT). It also provides for conciliation procedures for disputing parties and dispute settlement procedures. In a regulatory manner, the Pastoral Code gives discharge to the AGNT to prevent and manage disputes and conflicts between farmers and livestock breeders. In the absence of the installation of this structure, it is the branches of the National Transhumance Committee (CNT) that are active in this sense. The umbrella organisations of professional livestock breeders' associations (ANOPER, APESS) and the *Ruga* are involved in the sensitising of actors and in pacifying situations in the event of serious conflicts in which human deaths are deplored. The government also often dispatches the police to conflict areas and organises appeasement sessions with local authorities (municipal authority, village) and customary authorities, and representatives of livestock breeders' associations (ANOPER, APESS). According to APESS officials in Benin, conflicts have a negative impact on the emergence and proper functioning of livestock markets.

Through its recognition and conditions of exercise, and better respect for agro-pastoral law by local governance officials, livestock farming is becoming more attractive to young pastoralists and their future.

3 A discussion of the scenarios

The three scenarios that emerge from the synthesis of the prospective studies should be discussed at several levels. As a first step, a comparative approach to their impacts can be made on the basis of the elements provided by the study of social, economic and environmental impacts of mobile livestock systems^{lxix}. Secondly, it is also possible to understand the consensus and divergence around the scenarios through the public 'narratives' expressed by the stakeholders, corresponding to different socially situated positions. Finally, as a third stage, we can examine the conditions necessary to accompany the third scenario in order to measure its feasibility and to be able to assess the means to be mobilised.

3.1 Strengths, limitations and sustainability of the three scenarios

Impact and sustainability, an analytical framework

Livestock systems generally contribute to the achievement of various Sustainable Development Goals (SDGs). The study of social, economic and environmental impacts on mobile livestock systems identifies eight SDGs whose levels would be affected by the reduction of livestock activities or their industrialisation at the regional level. These are MDGs 1 (No Poverty), 2 (Zero Hunger), 3 (Good Health and Well-Being), 5 (Gender Equality), 8 (Decent Work and Economic Growth), 12 (Responsible Consumption and Production), 13 (Climate Action) and 15 (Life on Land).

Figure 35 Livestock system & SDGs

Source: Iram-Issala-Lares, 2021



Comparison of the three scenarios

Each scenario is in some way the result of an interaction between stakeholder strategies, collective actions and public actions, the latter combining different actors and levels, between local authorities, national and international institutions. Each scenario is conceived as a result of potential public policies^{lxxii}. As such, it is possible to assess them in terms of impacts. These are defined as all the effects, positive or negative, generated by an intervention (or a set of interventions), directly or not, intentionally or not. The study conducted by PEPISAO identifies, based on the theory of change built around livestock practices, 16 areas of impact related to mobile livestock systems. This study identifies a set of indicators (or 'proxies') in the three main categories of sustainable development - economic, social and environmental - to analyse and characterise the sustainability of livestock systems. Based on the elements described above,

the three scenarios can be ranked according to their expected impacts in the various areas concerned.

a. The trend scenario results in a less and less productive and resilient evolutionary trajectory for the livestock systems, with increasing fragmentation of resources and exacerbation of conflicts of use. Inclusive territorial projects are hampered by the tendency to withdraw into the community.

b. The rupture scenario is based on intensive systems that are less resilient in the face of climatic hazards, a stronger disconnection between sedentary and mobile agro-pastoral systems, a sharp reduction in fertility transfers, risks of overgrowth and accidental fires in pastoral areas, and above all the depopulation of these territories (no-man's-land), which is conducive to the uncontrollable deployment of illicit activities and trafficking, carrying dangers for the Sahelian

and coastal societies. The employment crisis in the value chains of pastoral products (women and young people) persists, due to the lack of a proactive and coherent investment policy that minimises the occurrence of crises in pastoral communities in order to reduce the rural exodus in search of urban jobs. The void left by the abandonment of pastoralism in the confines will accentuate the extent of insecure areas (a contributing motivation for the N'Djamena seminar in 2013, which has proved correct since at least 2015). Moreover, with a higher food bill, the economic and financial costs are greater (balance of trade), although the taxes collected, levied on an increasing number of imported products, are higher.

c. The integrated system ensures better productivity and resilience of pastoral livestock while preserving controlled mobility, compared to sedentarisation^{lxviii}. It is based on increased economic exchanges between pastoral and urban areas, the enhancement of local complementarities which strengthens resilience, improvement of the fertility, and reduces greenhouse gas (GHG) emissions.

Figure 36 Trend scenario, productivity and resilience of pastoral systems^{lxix}

Diversified livestock production, with a pastoral component that is seasonally mobile on a regional, sometimes cross-border, basis, alongside sedentary livestock production, both of which are mainly breeders, and sedentary farms

with stables, specialising in rearing, fattening or dairy production, seems to be the most suitable option for coping with the seasonality and inter-annual variability of forage availability and quality, both of which are likely to become even more variable and uneven with climate change. Both pastoral components require securing herds' access to pastoral resources, including water and rangeland forage, stubble and field weeds. This implies maintaining the communal status of water points and rangelands in hyper-arid, arid areas, but also in non-cultivable areas and conservation areas (classified forests, buffer zones around national parks) in more humid regions, as well as negotiated access to cultivated land after harvests: stubble and fallow.

The optimisation of forage selection by grazing livestock ensures the best possible productivity of pastoral livestock and can be reinforced by the flexibility of pastoral mobility obtained by decentralising the organisation of daily grazing circuits and seasonal transhumance. Inclusive community management also appears to be a more effective and less costly solution for adapting to the variable distribution of resources. It ensures more responsive livestock mobility, which is key to controlling the risks of degradation due to overloading during the rainy season and to promoting the resilience of ecosystems to the climatic hazards of the monsoon.

It contributes to reducing inter-community conflicts and reinforces the harmonious development of territories. Through its recognition and sustainability, the mobile livestock farming lifestyle, supported by innovations (social, digital) remains attractive to young farmers. As taxation remains based on import levies, only this area of contribution is negatively affected compared to the other two scenarios.

Figure 37 Synthesis of the impacts of the three scenarios

Synthesis of the economic, social and environmental impacts of the three scenarios

The following table provides an integrated and comparative visualisation of the economic, social and environmental impacts of the three scenarios with a 2040 horizon.

A : Scénario tendanciel

B : Scénario de rupture

C : Scénario accompagné

Impacts économiques				Impacts sociaux				Impacts environnementaux			
SCENARIO	A	B	C	SCENARIO	A	B	C	SCENARIO	A	B	C
Contribution au PIB	Yellow	Red	Green	Contribution à la souveraineté alimentaire	Red	Yellow	Green	Contributions en lien avec le changement climatique (GES, adaptation, résilience)	Yellow	Red	Green
Contribution à la balance commerciale	Yellow	Red	Green	Contribution à l'emploi	Red	Yellow	Green	Contribution à la qualité et à l'économie des ressources en eau	Yellow	Red	Green
Contribution aux recettes fiscales	Yellow	Green	Red	Contribution au bien-être social	Red	Yellow	Green	Contribution au maintien de la biodiversité	Red	Yellow	Green
Contribution à la réduction de la pauvreté	Yellow	Red	Green	Contribution à l'identité culturelle	Yellow	Red	Green	Contribution à la lutte contre la désertification	Red	Yellow	Green
Contribution à la réduction des inégalités	Yellow	Red	Green	Contribution au bien-être animal	Yellow	Red	Green	Contribution à la fertilité des sols	Red	Yellow	Green
				Contribution à la sécurité et aux relations pacifiées entre groupes sociaux	Red	Yellow	Green				

3.2 Consensus and divergence around the scenarios

Upstream of public policies, a certain number of ideas^{lxxxv}, organised in the form of 'narratives', feed the actors' dynamics and the decisions taken. There are many such narratives about the future of pastoralism. They can both enrich and hinder the production of objective knowledge and information that accompanies the decision-making process of decision-makers^{lxxxvi} and are, as such, a determining factor in the directions taken. By cross-referencing the agendas of stakeholders at the different levels where the issues of mobile livestock and pastoralism are discussed, several narratives can be identified.

Desertification, climate change and pastoralism

A first narrative talks about environmental degradation and resource scarcity based on the desertification narrative^{lxxxvii}. This narrative, promoted by many environmental and planning actors, draws on arguments that have been used since the colonial period and is based on notions that are often ill-suited to the semi-arid environment, which scientific knowledge has since clearly demonstrated (forage harvesting by grazing does not exceed one third of herbaceous production and less than 3% of woody foliage). The narrative is accompanied by an increased control over resources and spaces by mobile livestock systems and leads, in terms of livestock farming, to the 'promotion of forms of grazing management by fencing'^{lxxxviii} or the conservation of protected areas, contributing to the destructuring of forms of collective governance that allow the practice of pastoralism that is better adapted to the spatial and temporal risks of the forage resource. It can intersect, on a national and international scale, with the interests of investors in ranching as well as with those of nature conservation actors.

More recently, many actors mobilised around climate change issues tend to promote a critical narrative of livestock farming as a major source of greenhouse gas emissions, particularly methane from gastric fermentation. Although the externalities linked to livestock farming are real, it is necessary, in this type of reflections^{lxxxix}, to consider the diversity of livestock systems in order to appreciate the unsustainability of certain models (e.g. US *feedlots*). It also makes it possible to better estimate the margins of progress of other systems which, because of their socio-economic

contribution to the existing means of highly vulnerable agropastoralists and because they make use of non-cultivable land and supply co-products (organic fertiliser), present a more favourable cost-benefit balance, which is the case of mobile livestock systems in sub-Saharan Africa, which are presented as 'climate-smart' solutions by certain researchers^{lxxx}.

Pastoralism and insecurity

For some national and international institutions^{lxxxi}, as well as in many press articles, a suspicion develops of 'affiliation of pastoralists to insurrectionary movements and/or banditry on an ethnic basis, sometimes confused with a dynamic of religious radicalisation'. 'Farmer-herder conflicts' have been on the agenda of ECOWAS and ECCAS summits of heads of state and government for some years now, alongside 'terrorism' and 'violent extremism'^{lxxxii} and some politicians are advocating 'anti-pastoral' policy measures at various levels^{lxxxiii}.

Figure 38 Conflicts between farmers and herders, rethinking the phenomenon?^{lxxxiv}

Data from the Armed Conflict Location and Event Data Project (ACLED) do not support the recent political focus on violent conflict between farmers and herders. While the data shows high and rising levels of violence in a small number of countries, these are aggregate figures for the population as a whole. There is no evidence that conflict between farmers and herders has increased more rapidly than other forms. Indeed, in the ACLED data, the proportion of national incidents and casualties associated with farmer-herder conflict is often lower than the percentage of pastoralists in the national population. Nevertheless, when incidents do occur, they are often staggeringly brutal and widely reported in the media. The ACLED data also indicates that while there are significant national and regional hotspots where unresolved disputes fester, peaceful relations and a spirit of cooperation persist over much wider areas. Even within hotspots, violent conflict is usually ad hoc and intermittent, occurring alongside regular cooperation. Most conflicts in rural areas are managed peacefully by customary leaders and local institutions. The current focus on the escalation of violence neglects this reality and therefore prevents lessons being learned.

By a mirror effect, support for pastoralism can be seen as a 'barrier to insecurity' and the revival of funding dedicated to pastoralism goes hand in hand with the strategic priority given to the fight against terrorism. The narrative of the conflict becomes the framework for intervention modalities in the field of livestock. Actors need to take this approach in order to develop their intervention themes and mobilise the necessary support. This is, for example, the case of regional pastoral organisations that are developing questioning about young pastoralists, victims of

armed movements, and are looking at how the children of pastoralists perceive the professional future of the profession and the lifestyles that accompany it.

In the face of this fundamental movement, scientific knowledge tends to question the generalised increase in violent conflicts involving pastoralists, as well as the regional level of analysis, which does not take into account the local roots of conflicts. These conflicts are part of historical and socio-political contexts that are often specific and territorial and for which it is necessary to analyse all the dimensions, particularly land governance. These views, which focus on violence between farmers and herders, are often strongly amplified by 'emotionally charged' issues^{lxxxv} of ethnicity, religion, culture or land. Radicalised militant groups fuel conflicts in different contexts (Burkina Faso, Nigeria, Mali) to stimulate the recruitment of their supporters. In addition, some armed groups position themselves as defending the interests of pastoralists, while political elites or other 'cause entrepreneurs' may stigmatise pastoralists to mobilise village communities.

Paradoxically, herders are often the first victims of violence and theft of livestock by extremist groups. And although farmers and herders have historically maintained competitive and complementary relations, complex chains of events can cause manageable conflicts between farmers and herders to spiral into inter-community violence. The factors at the origin of these conflicts were recalled in the introductory state of affairs of this document. They are accentuated by pressure on land and water resources, abuses in the application of regulations or certain counter-insurgency campaigns. Herders may be confronted with the denial of their use rights, the non-application of legislation protecting their access to resources (e.g. agricultural practices in transhumance corridors in Benin) or their exclusion from dispute resolution mechanisms. Measures to prohibit open grazing and herd mobility in certain territories^{lxxxvi} may reduce conflicts in the short term but threaten the viability of pastoral and even agricultural practices in the medium and long term. Lawless areas have been created as a result of the decline in pastoralism (eastern Mauritania, northern Mali, central-western Niger) because there is no longer any occupation of the territory and no endogenous surveillance by pastoralists...

Conversely, it is interesting to note practices which, even in the most conflictual areas, can help to reduce tensions between farmers and herders by allowing the development of new forms of mediation supported by the public authorities. Work^{lxxxvii} on the ground notes, for example, the organisation of the *Kabara* ('common ground') committee of the Shuwa community or the popular forum between Peul herders and M'bula farmers in the locality of Demsa, both in Adamawa State, Nigeria, the local conventions promoted by the Sebekoro municipality in western Mali, or the information works (accessible resource maps) and communal management work promoted by the communication network on pastoralism (Recopa) in eastern Burkina Faso. The security forces can also contribute to easing inter-community tensions (Yanfolila district in the Sikasso region of Mali), disarming situations of violence by providing a safe space for dialogue to take place locally in order to seek equitable solutions, while differentiating it from the fight against armed extremist groups.

3.3 The conditions for promoting an integrated regional scenario

In a single projection on the future, the different trends outlined in the three scenarios should be combined within a single reconfiguration more or less polarised by one or other of the scenarios envisaged. The comparative analyses that have been put forward - impacts and sustainability, narratives and stakeholder interests - in the prospective notes support a shared interest by livestock stakeholders in the regional integration scenario. They raise questions about the conditions for the determined development of a peaceful coexistence between agricultural and pastoral activities, based on their complementarities, including those offered by the various forms of transhumance, taking into account changes and facilitating their evolution or modernisation.

These conditions are mainly derived from the three prospective notes carried out for each field, as well as from the study on the socio-economic and environmental impacts. They make it possible to outline a framework for coordinated intervention at different levels between the actors concerned.

Policy dialogue around a shared vision at regional level

In order to create a viable environment for livestock farmers and economic agents involved in value chains, it is necessary to build a shared vision at the regional level, which is the only level capable of ensuring complementarities between Sahelian pastoral areas and coastal urban markets. Given the diversity of situations encountered, a shared vision at this level must not result in a single regional policy applicable regardless of the context. It must, in accordance with the principle of active subsidiarity, be based on national policies and local measures which can only be meaningful, relevant and effective if they are part of a clearly defined regional coherence. It must be a framework for intervention that federates the compromises, not only of the States, but also of the diversity of the actors involved.

To achieve this, it is essential to conduct an in-depth political dialogue between the political authorities of the various countries in the region, involving in depth the public and socio-professional stakeholders concerned, in order to define this medium- and long-term vision, integrate the changes underway (demographics, evolution in production systems, evolution in forage resources, evolution in demand for proteins, political and social dynamics, deterioration of the security environment, etc.) and define policies that will make it possible to anticipate and accompany the necessary changes and fully and sustainably exploit the economic, social and environmental potential of livestock farming.

Conclusion: Livestock mobility, a regional common good

A possible compromise for regional integration?

In contrast to a harmonised vision based on the security and prosperity of livestock farming by 2040, threats are accumulating at the regional level around livestock farming issues. Among the main ones highlighted in this prospective study are growing dissensions between Sahelian and coastal countries, increased food dependency, land tenure risk and the weakness and lack of coherence of public policies.

The complementarity between Sahelian pastoral areas and coastal urban markets, which has historically structured the livestock sector, is tending to disappear in the face of growing divisions between Sahelian and coastal countries. In addition to the measures of sedentarisation and prohibition of pastoralism, there are projects and prospects for investment in intensive systems, ranches or in infrastructures for importing meat products.

The expected increase in the cost of access to red meat in coastal cities is countered by the prospect of increased consumption, and therefore production, of white meat and fish. Nevertheless, due to population growth, urbanisation, the gradual improvement in living standards and the emergence of a middle class, the prospects for growth in consumption are such that no source of meat products could replace the others in the short and medium term. The risk would be to make up the deficit by increasing imports of meat or maize and soya and to increase the region's food dependence with the sanitary risks and price volatility, not to mention the carbon footprint of the livestock systems of exporting countries and the long-distance transport.

Mobile livestock systems are part of the solution within the range of possibilities. They contribute, in convergence rather than in opposition to family farming^{lxxxviii}, to the creation of employment, income and sustainable livelihoods while improving agricultural productivity and long-term food security for West Africa. They can also contribute to climate change adaptation while preserving natural resources and biodiversity. Accompanying them is a way to strengthen social

cohesion in many rural territories and to contribute to the pacifying of conflicts.

In the face of growing tensions over the use of pastoral resources and land rights, as well as the threats posed by climate change^{lxxxix}, it is necessary to renew approaches and modernise land law. Several avenues are possible, such as the development of relational approaches^{xc} where access issues are articulated between herders and farmers on the one hand, but also between other livestock breeders and local land authorities on the other. Depending on the areas concerned, the challenge is to accompany negotiations between actors in order to define the content of the rights to be recognised and to legitimise the authorities susceptible to establish and guarantee them. The recent N'Djamena ministerial declaration also makes important recommendations for better securing agro-pastoral land tenure^{xc1}.

Finally, herders' organisations, through their regional networks (RBM, CORET and APSS), have gained recognition in recent years in the consultation on public policies. Often less well regarded and visible than agricultural organisations, many grassroots organisations also work on information and services for pastoralists in direct relation to the organisation of mobility and access to markets. However, the public policies concerned suffer from numerous pitfalls and limitations in their implementation to influence the evolutionary trajectories of livestock systems. Policies are sometimes incomplete in their formulation (lack of application decrees), their coherence may leave something to be desired (trade and agricultural policies, for example) or their articulation between different levels (coherence of national policies with regional policy) remains partial. Their implementation is often limited and constrained by the lack of resources, monitoring and verification at the different levels of application.

Building an integrated perspective on common ground

In the face of these various threats, it is necessary to rebuild an integrated perspective on common foundations to be constructed between the stakeholders concerned.

This perspective must be based on the interdependence that shares, each at their own level, Sahelian and coastal countries, consumers and producers, farmers and herders, citizens and political leaders. *"The 'in-common' (...) presupposes a relationship of co-ownership and sharing, the idea of a world which is the only one we have and which, to be sustainable, must be shared by all its right holders, all sorts combined"^{xcii}*. This 'in-common' must not be idealised. Historical evolutions highlight the slow process of dissolution that is accompanied by the disappearance of old complementarities, the individualisation or increasing 'privatisation' of spaces, the rise of social inequalities and, sometimes, even the breakdown of alliances. But also, on the other hand, the appearance of new forms of solidarity. And of cooperation.

This raises the question of whether better recognition of pastoralism, both in the texts and in the renewal of approaches, can guarantee the sustainability of a practice based on multiple interdependencies and complementarities: between farmers and herders, producers and consumers, Sahelian and coastal countries, citizens and politicians.

As the International Year of Pastoralism^{xciii} and the accompanying prospects for international support are announced, innovations and investments supported by development aid only make sense if they are part of a regional vision^{xciv} based on a solidly established compromise, capable of reducing the opportunism that destroys social cohesion and bringing together the initiatives that strengthen it in an action plan to be updated^{xcv}.

List of acronyms

ACLED	Armed Conflict Location and Event Data Project
AFD	French Development Agency
APESS	Association for the Promotion of Livestock in the Savannah and Sahel
CNC	National Transhumance Committee
SWAC	Sahel and West Africa Club
CILSS	Inter-State Committee for Drought Control in the Sahel
ECOWAS	Economic Community of West African States
DynPED	Master of Geography on the Dynamics of Emerging and Developing Countries, University of Paris 1-Panthéon Sorbonne
GHG	Greenhouse gases
OECD	Organisation for Economic Co-operation and Development
ODD	Sustainable Development Goals
PACBAO	Meat and Livestock Marketing Support Project in West Africa and Chad
PADEL	Livestock Development Support Project
PDDEPS	Programme for the Sustainable Development of Pastoral Farms in the Sahel
PEPISAO	Integrated and Secure Livestock and Pastoralism Project in West Africa
GDP	Gross domestic product
PRAPS	Regional project to support pastoralism in the Sahel
PREDIP	Regional dialogue and investment project for pastoralism and transhumance in the Sahel and coastal countries of West Africa
PRIDEC	Regional investment programme for livestock development in coastal countries
RBM	Billital Maroobé Network
RECOPA	Pastoralism communication network
TEC	Common external tariffs

List of illustrations

- Figure 1 Mobile livestock systems as a response to climate variability 8
- Figure 2 Cattle and sheep/goat livestock numbers by country..... 9
- Figure 3 Evolution of livestock numbers in West Africa..... 10
- Figure 4 Cost of production according to different livestock systems..... 10
- Figure 5 Pastoral livestock, a balanced carbon footprint..... 11
- Figure 6 Meat availability (red meat (pork excluded), poultry & pork) and import share (%) 12
- Figure 7 Livestock marketing flows in West Africa..... 12
- Figure 8 Typology of livestock systems..... 13
- Figure 9 Farmer-herder relationships and the connection of pastoralist livestock systems 13
- Figure 10 Actors and functions in livestock value chains 14
- Figure 11 Evolution of temperatures and extreme events in West Africa 15
- Figure 12 Expansion of cultivated areas between 1975 & 2013..... 16
- Figure 13 National policies on livestock mobility 19
- Figure 14 Estimates of demand in the ECOWAS zone for different types of meat in 2030 and 2040..... 20
- Figure 15 Mobile livestock system and prices of meat products..... 21
- Figure 16 Women and pastoralism 23
- Figure 17 The ambivalence of new information and communication technologies 24
- Figure 18 Evolution of livestock systems, theory of change..... 26
- Figure 19 Synthesis of the trend scenario 27
- Figure 20 Distribution that would adapt by 2040 28
- Figure 21 Transport and slaughter of animals..... 29
- Figure 22 Synthesis of the rupture scenario 30
- Figure 23 New livestock farmers and state investment plans..... 31
- Figure 24 : Importing feed?..... 31
- Figure 25 Sedentarisation policies for pastoral livestock 32
- Figure 26 Synthesis of the accompanied scenario 33
- Figure 27 The concept of a regionally integrated production system 33
- Figure 28 Coping with import competition..... 34
- Figure 29 Reducing conflict through seasonal stabling..... 34
- Figure 30 Marketing channels that adapt 34
- Figure 31 Dairy production still poorly connected to the market 35
- Figure 32 Producing feed on a regional level..... 35
- Figure 33 Initiatives that create social links in the territories and include pastoralists 36
- Figure 34 Managing transhumance in the face of rising conflicts in Benin 37
- Figure 35 Livestock system & SDGs..... 38
- Figure 36 Trend scenario, productivity and resilience of pastoral systems..... 39
- Figure 37 Synthesis of the impacts of the three scenarios 40
- Figure 38 Conflicts between farmers and herders, rethinking the phenomenon? 41

Bibliography

Preliminary work led by Pepisao

Iram-Issala-Lares & GIZ, 2020, Evaluation of the regulatory framework for pastoralism and cross-border transhumance in West Africa and the Sahel, AFD, ECOWAS, draft report

Camara A. D., 2021, *What are the prospects for the evolution of the contributions of mobile livestock systems in relation to the political, technological and social changes underway in West Africa and the Sahel?* Note de réflexion prospective n°3, ECOWAS-Pepisao.

Duteurtre G. & Corniaux C., 2021, *What are the prospects for the evolution of the contributions of mobile livestock systems to the regional economy and livestock value chains in West Africa?* Note de réflexion prospective n°1, ECOWAS-Pepisao.

Hiernaux P. & Assouma M. A., 2021, *What are the prospects for the evolution of the contributions of mobile livestock systems in the face of the densification of rural areas and climate change in West Africa,* Note de réflexion prospective n°2, ECOWAS-Pepisao.

Guilman E., Kubek G., Bernard E., Rambhunjun P., 2021, *Contribution à la cartographie et l'infographie des travaux thématiques sur le devenir des systèmes d'élevage mobile en Afrique de l'Ouest et au Sahel*, DynPED-Iram workshop, Paris, Université de Paris 1 Sorbonne.

Iram-Issala-Lares, 2021, *Analysis of social, economic and environmental impacts, main drivers of change and long-term prospects of mobile livestock systems in West Africa,* ECOWAS-AFD, draft report.

Prospects for livestock and pastoralism in West Africa

Blein R., 2015, *Vers une prospective régionale sur le pastoralisme en Afrique de l'Ouest*, Inter-Réseaux développement rural, 32 p.

CIRAD, SDC, FAO, ISRA, CDD, RECOPIA, 2020, *Vers une transhumance apaisée à la frontière entre le Togo et le Burkina Faso, perspectives d'une approche territoriale et anticipatrice*, 226 p.

FAO, 2019, *The future of livestock in Burkina Faso, challenges and opportunities in the face of uncertainty*, Sustainable Livestock in Africa 2050, FAO-USAID.

FAO, 2019, *The future of livestock in Nigeria, Opportunities and challenges in the face of uncertainty*, FAO-USAID, 46 p.

Herrero M., Havlik P., McIntire J., Palazzo A. & Valin H. , 2014, *Realising the potential of livestock for food security, poverty reduction and environmental protection in sub-Saharan Africa*, Office of the UN Special Representative for Food and Nutrition Security and the UN System Influenza Coordinator (UNSIC), Geneva, Switzerland, 118 pp.

OECD/FAO, 2021, *OECD-FAO Agricultural Outlook*, OECD Agriculture statistics (database) (<https://stat.link/vjrl3w>)

Billital Marobé Network and partners with Pellerin M. 2021, *Hearing the voice of pastoralists in the Sahel and West Africa: what future for pastoralism in the face of insecurity and its impacts?* Executive Summary, 22 p.

Other documents and information sources

<http://www.fao.org/faostat>

Ancey V., Rangé C., Magnani S. & Patat C., 2019: *Young pastoralists in town. Accompagner l'insertion économique et sociale des jeunes pastteurs*, Tchad et Burkina Faso, final synthesis, Rome, FAO, 40 p.

Assouma M. H., Lecompte P., Corniaux C., Hiernaux P., Ickowicz A., Vayssières J., 2019, "Pastoral livestock territories in the Sahel: a carbon footprint with an unexpected potential for climate change mitigation", *Perspective n°52*, CIRAD, 4 p.

Barrière O. & Bonnet B., 2021, *Analyse des trajectoires des politiques et du droit foncier pastoral en Afrique de l'Ouest*, working paper, 41 p.

Benjaminsen T.A. & Hiernaux P., 2019, *From Dessication to Global Climate Change: A history of the Desertification Narrative in the West African Sahel, 1900-2018*, 33 p.

Better than cash Alliance, 2020, *Towards the modernisation and professionalisation of livestock farmers*, company case study.

Bio Goura S., 2016, *Enjeux de l'élevage dans les politiques de sécurité alimentaire au Mali, au Burkina Faso et au Sénégal*, study report for APESS, 40 pages + annexes.

Milk Campaign, n.d. *Note de synthèse des études produites par la campagne Lait*, Mon Lait est Local-Tiviski-Apess-RBM-Roppa, 18 p.

ECOWAS, 2010, *Action plan for the development and transformation of livestock in the ECOWAS region, Horizon 2022-2020*, 77 p.

ECOWAS, 2016, *Horizon 2025 Strategic Orientation Framework*, ECOWAP/SADC Horizon 2025 Process & Regional Programme for Agricultural Investment and Food and Nutrition Security, PRIASAN, 2016-2020, Documents adopted by the ECOWAS Ministerial Committee on Agriculture, Environment and Water Resources.

ECOWAS, 2021, *ECOWAS Regional Climate Strategy (RCS)*, 150 p.

ECOWAS, 2019, *Regional Strategy for the Promotion of Local Milk Value Chains in West Africa*, 35 pages

Centre for Humanitarian Dialogue, 2021, *Agropastoral Mediation in the Sahel*, 35 p.

Coriat B., 2021, *Le bien commun, le climat et le marché*, Paris, éditions Les liens qui libèrent.

Coste J., Doligez F., Egg J., Perrin G., 2021, *La fabrique des politiques publiques en Afrique: agricultures, ruralités, alimentation*, Paris, Karthala-IRAM.

SWAC-OECD, 2021, *Transformations in Food Systems in the Sahel and West Africa, Implications for People and Policies*, Maps & facts, n°4, 37 p.

SWAC-OECD, 2021-a, "Pastoralism & Violence in North and West Africa", *West African Notes*, n°31, 45 p.

De Jouvenel H., 2004, "Invitation à la prospective - An Invitation to Foresight", Paris, *Futuribles Perspectives*.

De Lattre-Gasquet M., 2021, *Le développement des espaces ruraux en Afrique de l'Ouest*, *Futuribles international*, 31 p.

Descroix L., 2018, *Processes and water issues in Sudano-Sahelian West Africa*, IRD-éditions.

Dessie T. & Mwai O. (eds.), 2019, *The story of cattle in Africa, why diversity matters*, African Union-ILRI, 240 pp.

Duteurtre G., Corniaux C., De Palmas A., 2020, *Lait, commerce et développement au Sahel: impacts socio-économiques et environnementaux de l'importation des mélanges MGW européens en Afrique de l'ouest*, Report for the "Les Verts" and "S&D" groups of the European Parliament, CIRAD, 74 p.

FAO, 2014, *Capitalisation des appuis au développement du pastoralisme au Burkina Faso*.

FAO-African Union, 2021, *Framework for boosting intra-African trade in agricultural products and services*, 65 p.

FAO-IUCN, 2020, *Crossing Boundaries, Legal and Policy Provisions for Transboundary Pastoralism*, 195 p.

IFAD-UNCCD, n.d., *Women and pastoralism, preserving traditional knowledge, facing new challenges*.

Godet M., 2016, "Penser et agir autrement", *ENA Hors les murs*, n°458.

Inter-réseaux-SOS Faim, 2015, *Le paradoxe de l'élevage au Sahel : forts enjeux, faibles soutiens*, Bulletin de synthèse n°16, 8 p.

Inter-réseaux-PRAPS, 2017, "L'élevage pastoral au Sahel et en Afrique de l'Ouest, cinq idées reçues à l'épreuve des faits", *Bulletin de synthèse*, n°25 (www.inter-reseaux.org).

Inter-réseaux, 2020, *Réglementer la mobilité du bétail en Afrique de l'Ouest, pourquoi et comment*, Bulletin de synthèse n°31, 7 p.

Inter-réseaux, 2021, *Développement des filières lait local en Afrique de l'Ouest : quels rôles pour les organisations de producteurs et les entreprises*, Bulletin de veille thématique, n°407, 8 p.

Krätli S. & Toulmin C., 2020, *Conflicts between farmers and herders in Africa: rethinking the phenomenon*, IIED, Briefing, 6 p.

Kwaja & Ademola-Adehehin, 2017, *The implication of the Open Grazing Prohibition & Ranches Establishment Law*, Search for Common Ground, 22 pp.

Marty A., 2019, 'Les communs pastoraux et agropastoraux, une nouvelle approche pour le Sahel', in Delmas B. & Le Roy E., *Les communs, aujourd'hui! Enjeux planétaires d'une gestion locale de ressources renouvelables*, Paris, Karthala, pp. 107-122.

Musabyemariya B., 1997, *Place de la femme dans les systèmes pastoraux du Sénégal*, EISMV thesis, Cheikh ANta Diop University, Dakar, 96 p.

OECD-WAC, 2009: *Regional Atlas of West Africa*.

- Paliet B. & Surel Y., 2005, " Les 'trois I' et l'analyse de l'État en action ", *Revue française de science politique*, vol. 55, n°1, p. 7-32.
- Pinaud S., 2018, "Political economy of milk powder in West Africa", *Techniques & Culture*, 68, pp. 30-33.
- Praps, 2021, *Les accords transfrontaliers : outils de dialogue politique et de gouvernance des territoires agro-pastoraux ; quelle contribution au développement du commerce transfrontalier ?* Synthesis note n°2, Entretiens techniques du PRAPS-4, 18 p.
- ProSeR-Benin (Projet de sédentarisation des troupeaux de ruminants au Bénin), n.d., Étude de faisabilité technique et économique, Ministère de l'agriculture, de l'élevage et de la pêche, 118 p.
- Rangé C., Magnani S., Ancey V., 2020, "'Pastoralism' and 'insecurity' in West Africa, from reifying narratives to political dispossession", *International Journal of Development Studies*, 2020/3 n°243, pp. 115-150.
- RIMRAP, 2021, Les chemins de la résilience, capitalisation of the RIMRAP programme, EU-Mauritania Partnership, 99 p.
- Scones I., 2020, 'Pastoralists and peasants: perspectives on agrarian change', *The journal of Peasants Studies* (<https://doi.org/10.1080/03066150.2020.1802249>).
- Snorek J., Moser L., Renaud F.G., 2017, 'The production of contested landscapes: Enclosing the pastoral commons in Niger', *Journal of Rural Studies*, 51 (2017), pp. 125-140.
- Schmitt B., Forslund A. Tibi A. Guyomard H., Debaeke P., 2021. *How to ensure food availability on the African continent in 2050? Relecture africaine de l'étude INRAE " Places des agricultures européennes dans le monde à l'horizon 2050 " menée par l'INRAE à la demande de PluriAgri*. Study report, France, 62 p.
- Sounon A., Ickiwiecz A., Lesnoff M., Messad S., Valls-Fox H., Houinato M., 2019, 'Impact de la sédentarisation des éleveurs sur la production bovine au nord du Bénin', *Revue d'élevage et de médecine vétérinaire des pays tropical*, 72 (3), pp. 93-99.
- SWAC-OECD, 2020, *The Structure of Livestock Trade in West Africa*, West African Papers, n°29, 30 p.
- Thébaud B., Corniaud C., François A., Powell A., 2017, *Study on transhumance in the Sahel (2014-2017), ten findings on livestock mobility in West Africa*, Ukaid-UE-Acting for life-Cirad-NCG, 30 p.
- Vayssière J., Assouma M. H., Lecompte P., Hiernaux P., Bourgoin J., Jankowski F., Corniaux C., Vigne M., Torquebiau E., Ickowicz A., n.d., Livestock farming at the heart of 'climate-smart' landscapes in West Africa, Chapter 18, author's manuscript, 7 p.

Notes

- i Recommendations of the Abuja regional conference. At the initiative of the Nigerian government and ECOWAS, a regional conference on transhumance management was organised in Abuja in April 2018. In addition to the 15 ECOWAS states, the conference was attended by Mauritania, Chad, the Central African Republic and Cameroon.
- ii See previous work in the bibliography.
- iii The synthesis was prepared for the Iram-Lares-Issala group by François Doligez, Faridath Aboudou, Roger Blein under the coordination of Bio Goura Soulé, Bernard Bonnet, Thijs Wissink.
- iv See the Pepisao terms of reference.
- v Dessie & alii, 2019.
- vi <https://fr.wikipedia.org/wiki/Pastoralisme>.
- vii André Marty, 2019.
- viii Terminology used by Jeremy Swift and adopted by André Marty.
- ix CILSS, 2016, *West African landscapes, a window on a changing world*, cited in De Lattre Gasquet, 2021.
- x De Lattre-Gasquet M., 2021, *Le développement des espaces ruraux en Afrique de l'Ouest*, Futuribles international, 31 p.
- xi Part taken and adapted from the prospective note n°1.
- xii Faostat data, 2020.
- xiii And a partial "finishing" of the animals by grazing along the transport routes.
- xiv Assouma & alii, 2019.
- xv See also SWAC-OECD, 2020.
- xvi See prospective note n°2.
- xvii See prospective note n°2.
- xviii Descroix, 2018.
- xix Hiernaux and Assouma, 2021.
- xx Part taken and adapted from the prospective note n°2.
- xxi Inter-réseaux-SOS Faim, 2015.
- xxii Part taken and adapted from the working paper by Barrière & Bonnet, 2021.
- xxiii With the support of the French Development Agency and more recently the World Bank
- xxiv <https://www.foncier-ndjamena2021.org/>
- xxv ECOWAS Decision A/DEC.5/10/98.
- xxvi Part of the meat consumption is linked to the consumption of processed products within the food industry incorporating meat and, in particular, imported dishes supplied to fast food restaurants. Source: Calculated from FAOSTAT data (import and export data for Guinea-Bissau, Liberia (2010 and 2020), Guinea and Mali (2010) are missing. Only imports and exports by weight were considered. Edible offal was not included) and the UN's "World Population Prospects 2019".
- xxviii For an illustration in relation to rice policy, see Coste & Egg, 2021, 'Regional integration, food security and foreign trade policy', in Coste & alii, 2021.
- xxix Nor, a fortiori, the feed lots.
- xxx See prospective note n°1.
- xxxi Although for small-scale livestock farmers, the episodes of livestock constitution are marked by a transfer from cattle to sheep/goats, which are less expensive and more profitable.
- xxxii It takes 30 years to rebuild a herd that has suffered a 60% loss rate.
- xxxiii See Barrière & Bonnet, 2021 (based on Scoones I.).
- xxxiv See prospective note n°2.
- xxxv See prospective note n°3.
- xxxvi Public policy refocuses on creating the necessary incentive framework.
- xxxvii Musabyemariya, 1997; IFAD-UNCCD, n.d.
- xxxviii See prospective note n°3.
- xxxix Sustainable Technology Adaptation for Mali's Pastoralists.
- xl According to Thébaud & alii, 2017, the telephone represents the 4^{ième} expenditure item of transhumant families.
- xli See also the feedback from the Better than cash Alliance in Senegal (2020).
- xlii See prospective note n°1.
- xliiii See prospective note n°1.
- xliv Snorek J. & alii, 2017.
- xlv See prospective note n°1.
- xlvi See prospective note n°1.
- xlvii See, for example, in Togo, 'Suspension of cross-border transhumance, a blow to the national economy' (*Nzara News*, 25 February 2021) and in Benin, 'Prevention of conflicts between herders and farmers: The government puts an end to border transhumance' (*L'évènement Précis*, August 2021).

-
- xlvi
See prospective note n°2.
- xlvi
See ProSeR-Benin, n.d.
- l
See Ancey & alii, 2019.
- li
Based on the work of Elinor Ostrom, Benjamin Coriat (2021) defines the commons in terms of three elements: i) a resource with shared access; ii) a system of rights and obligations from which those associated with the commons benefit; iii) a mode of governance based on reciprocal control
- lii
See Iram-Issala-Lares, 2021, based on Inter-réseaux, 2015.
- liii
See OECD-SWAC, 2021.
- liiv
See prospective note n°1.
- liv
The agreement establishing the AfCFTA entered into force in May 2019 and covers 54 African Union states (36 ratifications). African countries have committed to eliminating tariffs on 90% of over 5,000 tariff lines and liberalising services (FAO-African Union, 2021).
Source: Calculated from FAOSTAT data (import and export data for Guinea-Bissau and Liberia are missing. Only imports and exports by weight were considered. Edible offal has not been included).
- lvii
Milk campaign, n.d.
- lviii
See prospective note n°2.
- lix
See prospective note n°1.
- lx
The terminal market of Fada NGourma, in the south-east of Burkina Faso, has seen a significant decline in activity since 2019 and the deterioration of security conditions. The crisis and mobility restrictions linked to Covid19 have not improved the situation (APESS, 2020, cited in outlook note 1).
- lxi
On the challenges of the 'local milk' sector and competition from milk powder, see Pinaud, 2018; Duteurtre & alii, 2020: Inter-réseaux, 2021.
- lxii
See prospective note n°1.
- lxiii
See prospective note n°1.
- lxiv
See the experience of the programme to support agricultural and pastoral resilience in Mauritania (RIMRAP, 2021).
- lxv
See Centre for Humanitarian Dialogue, 2021.
- lxvi
See prospective note n°3.
- lxvii
These initiatives are : *Building Resilience and Adaptation to Climate Extremes and Disaster (BRACED)* and *Projet d'appui à la conception de modèles de filets sociaux adaptés aux réalités de l'élevage pastoral (FISOREP)*.
- lxviii
Customary chiefs are authoritative and negotiate with administrative authorities. Some Fulani leaders are located at livestock market sites, providing a link with pastoralist groups on the move.
- lxix
Inter-network, 2020.
- lxx
Iram-Issala-Lares, 2021.
- lxxi
Iram-Issala-Lares, 2021.
- lxxii
Far from a linear and mechanical vision, the notion of public policy must be understood as the result of a continuous process of complex political negotiation leading to more or less stable compromises' and their 'making' is, in itself, neither neutral nor objective (cf. Coste & alii, 2021).
- lxxiii
Sounon & alii, 2019.
- lxxiv
See prospective note n°2.
- lxxv
See Palier & Surel, 2005.
- lxxvi
See Rangé C., Magnani S., Ancey V., 2020.
- lxxvii
See Benjaminsen & Hiernaux, 2019.
- lxxviii
Ibid, p. 127.
- lxxix
See Anne Mottet's contribution on livestock and climate change, Animal Production and Health Division, Natural Resources and Sustainable Production, FAO Livestock Department (MARS session, Paris, 2 March 2021).
- lxxx
Vayssière & alii, n.d.
- lxxxi
See OECD-SWAC, 2021-a (including the summary).
- lxxxii
Ibidem, p. 119, the narrative echoes the theorisation of '*New Fringe Pastoralism*'.
- lxxxiii
The Open Grazing Prohibition in Nigeria is emblematic of these positions, see Kwaja & Ademola-Adehehin, 2017.
- lxxxiv
See Iram-Issala-Lares, 2021, based on Krätli & Toulmin, 2020.
- lxxxv
Africa Center for Strategic Studies, African Security Bulletin, No. 39, July 2021.
- lxxxvi
Joint resolution of the governors of 17 southern Nigerian states in May 2021.
- lxxxvii
See African Security Bulletin, op. cit.
- lxxxviii
Scoones, 2020.
- lxxxix
ECOWAS, 2021.
- xc
See Gonin A., 2021, *L'accès aux ressources pastorales dans les régions agricoles d'Afrique de l'Ouest*, Comité technique Foncier & Développement, 4 p.
- xc
<https://www.foncier-ndjamena2021.org/>
- xcii
Achille Mbembé, quoted by André Marty, 2019.

-
- xciii The 42^{ième} FAO Assembly in June 2021 adopted 2026 as the International Year of Pastoralism at the initiative of the Government of Mongolia.
- xciv See ECOWAS, 2016.
- xcv See ECOWAS, 2010.