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Resilience and Economic Growth in the Sahel – Accelerated Growth

(REGIS-AG)

VALUE CHAIN AND END MARKET ASSESSMENT: SMALL RUMINANTS



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The U.S. Government's Global Hunger & Food Security Initiative

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Resilience and Economic Growth in the Sahel – Accelerated Growth (REGIS-AG) Project

VALUE CHAIN AND END MARKET ASSESSMENT—SMALL RUMINANTS

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Acronyms

AGRA	Alliance for a Green Revolution in Africa
ATP	USAID Agribusiness and Trade Promotion project
CAADP	Comprehensive Africa Agriculture Development Plan
CILSS	Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel
CNFA	Cultivating New Frontiers in Agriculture
COFENABVI	<i>Confédération des Fédérations Nationales des Filières Bétail Viande des Pays Membres de l'UEMOA</i>
CRS	Catholic Relief Services
CRSP	Collaborative Research Support Service
ECOWAS	Economic Community of West African States
E-ATP	USAID Expanded Agribusiness and Trade Promotion project
FCFA	West African franc
FODEL	<i>Fonds de Développement de l'Élevage</i> (Burkina Faso Livestock Development Fund)
FTF	Feed the Future
IICEM	USAID Integrated Initiatives for Economic Growth in Mali
ILRI	International Livestock Research Institute
IPM	Integrated Pest Management
NEPAD	New Economic Partnership for African Development
NGOs	Non-governmental Organizations
OIE	International Office for Epizootics
OPA	UEMOA's Observatory of Abnormal Practices
ORBV/AOC	<i>Observatoire Régional Bétail Viande de l'Afrique de l'Ouest et du Centre</i>
PROSUMA	Société Ivoirienne de Promotion de Supermarchés
REGIS-AG	USAID Resilience and Economic Growth in the Sahel—Accelerated Growth
REGIS-ER	USAID Resilience and Economic Growth in the Sahel—Enhanced Resilience
SNV	Netherlands Development Agency
UEMOA	West African Economic and Monetary Union
USAID	United States Agency for International Development

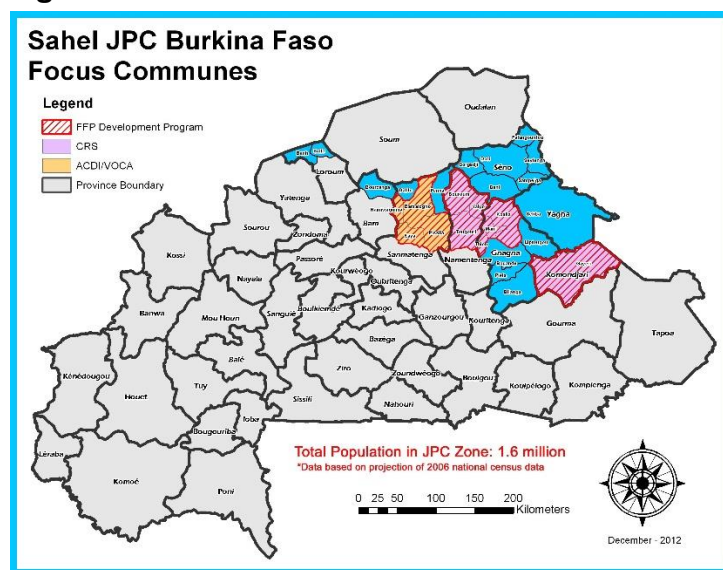
I. Introduction

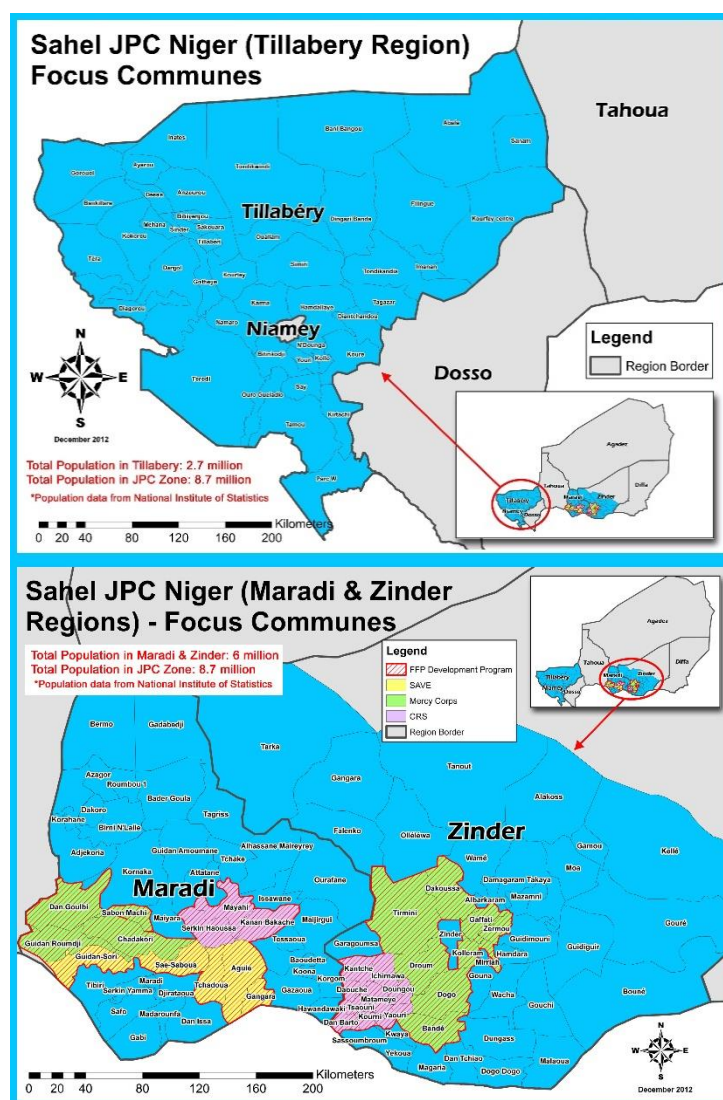
Resilience and Economic Growth in the Sahel – Accelerated Growth (REGIS-AG)

The USAID-funded Resilience and Economic Growth in the Sahel–Accelerated Growth Project (REGIS-AG) was launched in 2015 as part of USAID’s Resilience in the Sahel Enhanced (RISE) initiative. REGIS-AG is designed to increase the incomes of vulnerable households by increasing the performance and inclusiveness of the cowpea, poultry and small ruminant value chains and thereby increase resilience in selected agro-pastoral and marginal agricultural zones of Niger and Burkina Faso.

REGIS-AG is focused on the Tillabéri-Sud, Maradi and Zinder regions of Niger and three *départements* of north-eastern Burkina Faso, specifically Dori, Kaya, and Fada (Figure I). Taking a value chain approach, REGIS-AG works with producers, input suppliers, transporters and other marketers, and processors, linking with national officials and with partner projects to spur development of profitable markets.

Figure I: REGIS-AG Focus Areas in Burkina Faso and Niger





REGIS-AG is contractually required to produce a Value Chain Assessment and an End Market Assessment for each of the 3 value chains in order to guide project planning so that the design and implementation of project interventions can help meet local requirements and market demand. For the purposes of concision, it was decided to combine the Value Chain Assessment and End Market Assessment for each value chain into this single report.

Methodology

The work on this small ruminants value chain analysis was begun in April 2015, consisting of extensive literature review and participatory field work in Niger and Burkina Faso to understand constraints and opportunities, relationships, governance dynamics, and the enabling environment, with an important focus on understanding the role and constraints affecting vulnerable populations, especially women and children.

End market demand for small ruminants constituted an important part of the field research in Burkina Faso and Niger. REGIS-AG sent teams to Côte d'Ivoire, Ghana and Nigeria for a week's worth of study of the end markets for small ruminants. The end market material in this report also relies upon desk

work from a variety of sources, including reports by the USAID ATP/E-ATP project, which covered ruminant animals and meats as one of its six value chains from 2009-2013.

In Côte d'Ivoire, the assessment was conducted in livestock markets in Abidjan, Bouake and the northern city of Korhogo; in Ghana in Accra, Kumasi and Techiman; and in southern Nigeria in Ibadan and Lagos. For Northern Nigeria, the assessment combined a desk study with a stakeholder meeting for cowpea and livestock traders from both Niger and Nigeria held in Maradi on August 1st due to security issues related to Boko Haram.

Constraints and opportunities identified for the segments of the small ruminants value chain related to production, processing, inputs and marketing can be found in tables in Annex One. A Bibliography and References section also shows the provenance for much of the material, complemented by REGIS-AG field work.

Summary

The livestock industry in Burkina Faso and Niger is an important and long traditional economic activity. While cattle are the premier product, small ruminants such as sheep and goats fulfill a major complementary role in the livelihood strategies, food security, and businesses of men and women throughout the local economies. For REGIS-AG, understanding the local context of how small ruminants fit into people's lives is critical for undertaking project interventions that can enhance the competitiveness of live animals and value-added products such as meats, milk, and the hides and skins sector. Along with oil and natural gas, the livestock value chains are "a leading vector for regional integration" (IRAM 2014). Both countries are well-integrated into the West African regional market under ECOWAS and UEMOA, but there are many difficulties in the enabling environment in order to modernize the small ruminant value chains, reduce vulnerability and improve food security.

The **Value Chain Assessment** showed three main areas of activity in Niger: the rearing of small ruminants for home consumption, for sale in the local livestock markets, and for reproduction purposes. One of Niger's natural riches is the excellent native breeds of sheep and goats, especially the *chèvre rousse de Maradi*. Niger was estimated in 2014 to have 14.9 million sheep and 11.9 million goats, more than the total population of humans. Small ruminants are well-adapted to the Sahelian environment, as they can sustain from diverse feed sources and can, in the case of sheep, move long distances to access pastures during the transhumance. In Niger, the bulk of the small ruminant herds are reared under extensive, transhumant conditions—whether internal or external transhumance—with a small core of sedentary operations in the agricultural zone. Niger also has a premium dried jerky product known as *kilitchi*.

In Burkina Faso, there were about 8.7 million head of sheep and 13.1 million goats in 2012, with about half of all households owning small ruminants (*Ministère des Ressources Animales* 2013). In contrast to Niger, the greatest part of Burkina Faso's small ruminant herds are short-distance transhumants with a home base ("sedentary extensive" systems) in agro-pastoral areas, with only smaller shares raised in extensive transhumant systems and intensive or semi-intensive fattening operations. There is a noted seasonality in livestock prices over the course of the calendar year, peaking in May and June just before the "hungry season" when cereals, feedstuffs, and food for both humans and animals can double in price. The closure of the Tan-Aliz tannery near

Ouagadougou has meant the loss of a large amount of value addition and external trade in skins and leather. Figures 3 and 6 in the main body of the text show the REGIS-AG value chain diagrams for Niger and Burkina Faso respectively.

Environmental issues are particularly important in the small ruminants value chain, given the reliance on open grazing and the feeding of collected forage materials. Sheep in particular practice transhumance, but the grazing areas for both sheep and goats extend from pastoral and agricultural zones of the country to the edges of the large population centers in Burkina Faso and Niger, the rest of the Sahel and the coastal region. Methane emissions by the animals contribute to global warming, while desertification too frequently results from the traditional extensive-type grazing patterns.

The livestock value chains are very well-organized in both Burkina Faso and Niger, with the representative associations for all segments of the value chain participating in the national-level body known as the *interprofession*, which in turn participates in the regional livestock body COFENABVI. While producers are represented in these bodies, when face-to-face with traders, a herder selling only a few animals has limited market power. Women are particularly constrained in their market participation, whether in decisions to purchase inputs or sell their animals, and need particular efforts for improved market participation and benefits.

There are readily observable problems in terms of inadequate and unhygienic infrastructure and equipment in the livestock markets, the slaughterhouses (*abattoirs*) and among the retail butchers. Demand for live animals and meat, both in the REGIS-AG countries and in the export markets along the coast, would increase with improved practices and greater attention to hygiene and cutting operations. Butchering is the near-exclusive domain of men.

The enabling environment for small ruminant production is generally favorable, as governments are involved in animal health but encouraging the private sector to take the lead. Both Burkina Faso and Niger impose an export tax on small ruminant exports, including to other ECOWAS partners, presenting a drag on their competitiveness in the target markets along the coast (USAID ATP/E-ATP 2010a). In Burkina Faso, it is the FODEL and in Niger the statistical export tax.

Input markets in both countries function in inefficient fashion. Pasture and forage materials are the main component of small ruminants' diet, although the fattening of sheep is becoming more widespread. Compound feed and nutritional supplements are available but considered costly. A greater number of compound feed-mixing operations are needed in both Burkina Faso and Niger in order to expand meat output through fattening before sale. Women tend to take the lead in initiating feeding during the period before sale for slaughter, as the animals are close to home at that time.

Veterinary services are generally available in both countries in organized livestock markets to combat animal diseases. The Ministry of Animal Resources in each country does make government veterinarians available to small ruminant producers in most regions, but there are obstacles to the needed growth in private sector veterinary services. Small ruminant producers have difficulty in gaining access to safe, effective treatments and women seem more willing to spend money on veterinary services than men.

As for marketing, a large share of sales occur in organized livestock markets. Small ruminants are often found in a separate, less well-tended market alongside the markets for cattle and other animals such as donkeys or camels. Animals travel by foot to market or are transported in trucks, donkey carts, or even on public buses. Transport services are procured on an as-needed basis, which raises costs, and unfair policies and practices by uniformed officials on the roadways increase costs in terms of time and money.

The value added in the processing of small ruminants mainly occurs in the meat sector and in hides and skins. There is little intra-regional trade in meat due to the absence of refrigerated trucks or rail cars and major problems in cold chain assurance. There are substantial exports of hides and skins from both countries. Leather-containing handicrafts circulate freely among ECOWAS countries. The milk sector is mainly oriented around cow's milk, with sheep and goat milk mostly not marketed and consumed in the producers' homes, considered essential for nourishing children. The lambs and goat kids drink most of it.

The **End Market Assessment** for small ruminants benefited from REGIS-AG field research in Burkina Faso and Niger and market research missions to Côte d'Ivoire, Ghana and Nigeria. One clear conclusion is that Sahelian livestock producing countries have a regional comparative advantage in supplying live animals to coastal populations with limited livestock but large and growing urban markets. Both men and women are involved in providing labor for the end markets in both countries, with men mostly responsible for the widespread grilling operations at the side of the roadways.

In Niger, nearly three-quarters of the population live in rural areas. As Niger's urbanization rate is likely to double by 2050, the proportion of meat marketed outside the home can be expected to increase substantially. Small ruminant exports to Nigeria fetch a higher price typically than domestic sales, to the point where only lower-quality meat is often available in Niger's home market. Exports total anywhere from 500,000 to 1 million head of sheep and goats per year.

Burkina Faso's end market is oriented around the two largest cities, Ouagadougou and Bobo Dioulasso. While there are modern slaughterhouses in these urban areas, most of the meat in the country is sold in traditional markets without the quality assurance of modern methods and traceability. Burkina Faso typically exports between 200,000 and 400,000 head per year, mainly to Côte d'Ivoire, Senegal, Ghana and Togo. The large Fada N'Gourma market also sends animals to Nigeria, many of them crossing the border between Benin and Nigeria on foot through the forest and across rivers.

In both Burkina Faso and Niger, and in the target export markets, there is a notable seasonal variation in demand for livestock and meat products oriented around holidays such as Ramadan, Tabaski and New Year's. Burkinabé and Nigerien consumers are very price-conscious, but look for plumpness and tenderness in the meat, which is mostly consumed grilled or cooked slowly in stews.

While official import figures are minimal and largely unreliable, the main competitors for sales of small ruminants in the national markets of Burkina Faso and Niger are animals from Chad, Nigeria, Libya, Mali, Algeria and Mauritania. Breeding stock could come from Europe or the U.S., but artificial insemination is not widely practiced. In the target export markets of Côte d'Ivoire, Ghana and Nigeria, the competition is from those same Sahelian countries along with Cameroon and fellow ECOWAS members Guinea and Sierra Leone.

The regional enabling environment on paper provides for free trade in basic staple foods such as live animals, meat, milk, hides and skins and leather handicrafts under the ECOWAS Trade Liberalization Scheme (ETLS) and the rules of UEMOA, with the primary and secondary legislation detailed in the relevant section below. In reality, trade between Burkina Faso and Niger, and with their ECOWAS and UEMOA partners, is greatly hampered by unfair policies and practices, which have been analyzed by a number of USAID and other projects, including the series of West Africa Trade Hubs and ATP/E-ATP.

In terms of individual country markets, Côte d'Ivoire has a thriving livestock sector with strong institutions, but according to COFENABVI imported over 400,000 head of sheep and goats in 2014 from Burkina Faso and Niger, whose fine breeds are considered premium products in the Abidjan market. Population growth and a shift away from 'bushmeat' towards safer meats processed under modern conditions bode well for growth in exports by the 2 REGIS-AG countries. One possibility worth exploring is to increase the number of animals sold to Côte d'Ivoire for reproduction purposes rather than for slaughter.

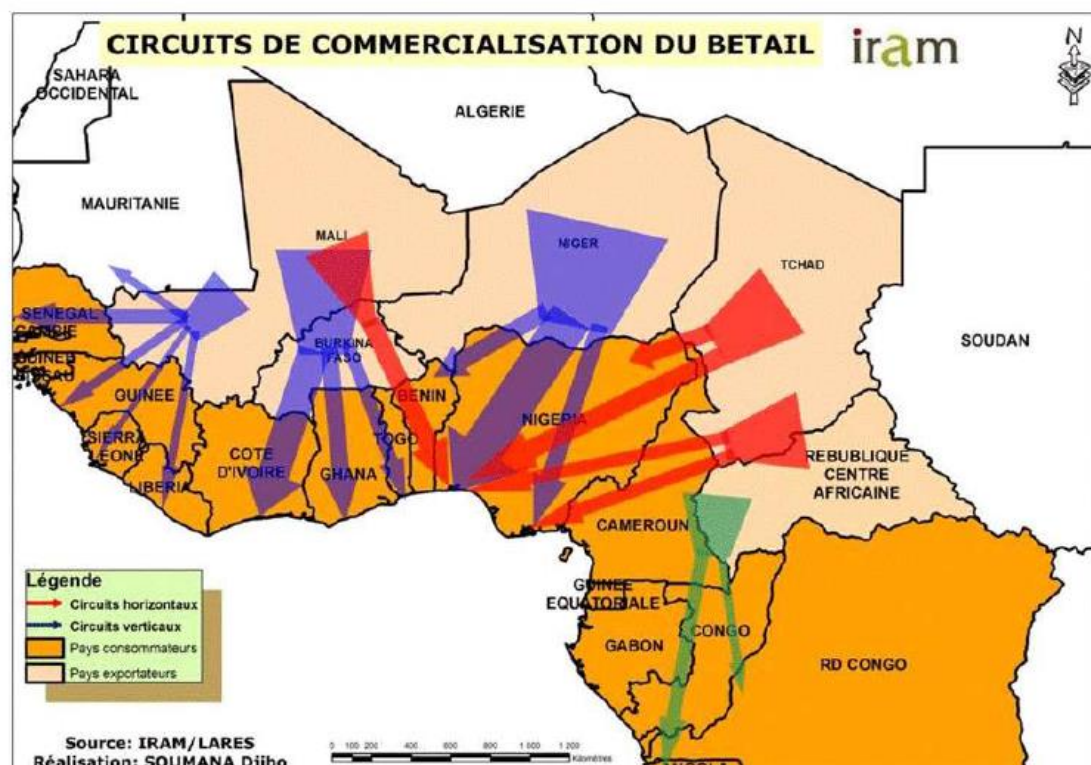
Ghana's livestock sector is not nearly as competitive as that in Côte d'Ivoire and relies on imports of 100,000 to 200,000 head per year. Ghanaian traders often travel to Burkinabé markets to bring animals back. Ghanaians prefer the smaller native breed of goat, which cost more per kilogram, but the most-modern supermarkets serving higher-income "non-traditional" consumers favor Burkinabé meat.

Nigeria, by far the largest West African country in terms of population and economy, is a vast market segmented by cultural, religious and culinary factors. The end market assessment for Nigeria details how the national livestock markets and slaughterhouses are overstretched and in need of investment, particularly given the growing population likely to eat more meat with rising incomes. The abattoir in the southwestern city of Ibadan is unusual in that one-third of the butchers are women. Traditional slaughtering accounts for the bulk of meat consumption, but supermarkets such as Shoprite can charge a 50% premium for lamb and 20% for goat meat rendered through modern methods. Nigerian consumers prefer the meat of male goats, and larger animals overall.

2. Value Chain Assessment of Small Ruminants in Burkina Faso and Niger

One of the most important things to recognize about the small ruminants sectors in Burkina Faso and Niger is that these two countries are already well-integrated into the West African regional market. There are substantial flows of sheep and goats both within each country and with neighboring countries (Figure 2).

Figure 2: Livestock Corridors in West and Central Africa



Source: IRAM (2014).

Small ruminants are important for household food security, resilience and income generation in Niger and Burkina Faso. Goats and sheep are often the main assets for the poorest farmers and herders and constitute an important source of cash, meat and daily milk. Small ruminants, similar to poultry, serve as an informal “bank” due to the way that the assets can be sold easily for cash during household crises but due to their higher investment value, is not as prevalent in the most vulnerable households as poultry is. Women’s roles in the livestock value chain have traditionally involved raising small ruminants and poultry, as well as pigs in coastal countries and parts of Burkina Faso (USAID WATHN 2015).

Production

Niger

Small ruminants are indispensable for food security and income generation in the Sahel. Goats and sheep are typically the only species of ruminant livestock owned by the poorest and constitute an important source of cash inflow for them. In fact, small ruminants act as a “bank” from which animals can be withdrawn when there is a need for cash. Small ruminant producers face many risks related to droughts, access to land and resources and security related issues (such as those that spillover from the Lake Chad region) and household level stressors that limit households to build their resilience to shocks. However, small ruminant rearing is a coping mechanism when the household is in need of cash. Small ruminants are also important for the nutrition of the producing households, through the milk they produce. Niger has the second largest herd in West Africa, after Mali, with about 14.9 million goats and 11.1 million sheep (ME 2014). There are more goats than bovine animals in Niger. No less than 95% of Niger’s small ruminant exports are estimated in official statistics to go to

Nigeria, although the majority of the trade goes unrecorded and animals definitely pass to the west into Burkina Faso and beyond. The sheep and goats value chain has two important value-added sub-sectors: meat and hides and skins. These are discussed in the section on processing.

Taken as a whole, the livestock sector accounts for 15% of the income and 25% of the food needs of Niger's population, equivalent to more than 11% of GDP, 35% of agricultural GDP, and 22% of the value of total exports. Niger's 41 million head of livestock (15,829,818 UBT) had a value of 3,000 billion FCFA in 2014 (ME 2014).¹ The small ruminant sector in Niger is disadvantaged by a lack of availability of purchased compound animal feeds and by frequent diseases. Two important environmental constraints are the reduced availability of forages in pastures and insufficient number of water points, both of which constrain small livestock production in the REGIS-AG target regions. Biomass production is of course heavily dependent on rainfall, with levels below normal since 2007 in the three regions. For Tillabéri, rainfall has been negative in every year recently (ME 2014).

One ancient practice is transhumance, where the animals migrate over the course of the year to remote districts to feed on the grazing material such as shrubs and other plants before being brought back to the livestock markets near the cities. FAO reports that in Niger, by far the largest part of the small ruminant herds operate under extensive, transhumant systems, with a “*noyau*” of sedentary fattening operations in the *zone agricole* (FAO 2016). While there is a West African protocol on transhumance defining certain rights of passage and access to water for herders, conflicts during the transhumance are becoming more common as landowners seek to exercise property rights. Agricultural expansion, particularly in the *marâchage* areas along the river banks, has been reducing access to the areas available for grazing and to water points. Sheep and goats untended will feed on a farmer's crops, so the potential for conflict is very present. During REGIS-AG workshops, stakeholders expressed concern about the increasing emergence of non-palatable plants in the pastures, rendering existing pastureland less productive. Finally, the participants identified theft of animals, another long tradition, as a factor reducing the profitability of their small ruminant production.

In the three focal regions, the majority of the production systems involve women providing important labor inputs. Stakeholders in the REGIS-AG validation meetings estimated that the percentage of households rearing small ruminants was 84% in Zinder, 60% in Maradi, and 70% in Tillabéri, with 60% of women in Maradi and 90% in Zinder involved in small ruminant production. The women are rearing an average of 10 animals in Maradi (6 goats, 4 sheep) and five in Zinder (3 goats, 2 sheep).

The majority of the small ruminants are still reared in extensive systems where the animals graze either in pastures near the household or farther away in open range. Increasing numbers of small ruminants are reared in semi-intensive systems with additional feedings occurring periodically, especially with crop residues and at times with purchased bran or other feed. Transhumant operations differ greatly as a business compared with the handful of confinement operations, which are much more likely to be in the formal sector. Whereas Tillabéri still has considerable pasturelands, Maradi and Zinder's significant agricultural areas limit grazing, exacerbated by the migration of agriculturalists into the pastoral zone, which is in the north of these regions. Transhumance patterns vary by region. Sheep in particular are suited for transhumance, which has

¹ The UBT (Units of Bovine Equivalent) is a measure permitting the conversion of the number of small ruminants in a herd into an equivalent unit representing a cow. This is particularly helpful for modeling feed consumption and for discussing the impact of a given size herd on the natural resources in a grazing area.

predominantly a north-to-south movement in Maradi and Zinder, and mainly east-to-west in Tillaberi. Animals move north and west when the agricultural season starts, and in the opposite direction at its end. As some of the animals are sold during transhumance, this also partly determines trade patterns.

Maradi and Zinder have the famous *chèvre rousse de Maradi*, as well as the common *chèvre du Sahel*, whereas the valued breeds of sheep are Balami, Oudah, and Ara-ara. According to FAO's *Profil Fourrager* for Niger, the *chèvre rousse de Maradi* is poorly suited for transhumance, thriving better under extensive, sedentary conditions (FAO undated-b). For Tillaberi, goat breeds include *chèvre du Sahel*, Gorgabe, Gourmadje, and sheep breeds include Bali-bali, Ara-ara, Kassawa and Koundoum, a goat indigenous to Niger river shores (see Annex Two for a detailed list of small ruminant breeds in Niger).

At the production level, gender roles in management are generally considered to be flexible. Most respondents during the REGIS-AG workshops considered buying of forage materials and feeding to be a man's role but one which women can do too. In contrast, the final stages of forage preparation to give to the animals and assistance in the reproduction of animals (birthing) was considered by the majority as a suitable role for women, men and children. However, almost three quarters considered that it is the role of men to contact the veterinarian and almost a third that the man should administer the medicines to small ruminants. The REGIS-AG gender analysis observed that this is so because calling upon a veterinarian's services involves spending money, seen as a man's role (USAID REGIS-AG 2015b). More than four out of ten considered the collection and preparation of forage materials to be the role of men only.

Nigerien small ruminant value chains engage a large number of actors, many of them vulnerable, from production, vaccination and sale of forages and feeds, to transport, trading, butchering, food preparation, and meat and food retailing. Goats and sheep are typically the only ruminant species owned by the very poor and constitute an important source of cash, meat, and milk that can help families respond to or mitigate risk. For example, among the Hausas of the south-central Tessaoua department of Maradi, the very poor owned one or no small ruminants, the poor owned on average two animals, middle-income owned 11, and the wealthiest owned 20 (Save the Children 2009). The very poor and poor also had access to small ruminants through a traditional system *kiyo*, which involves lending of small ruminants (typically goats) to a disadvantaged family who, in exchange for upkeep, receive benefits from it. Other groups in Maradi followed similar patterns where the poor community members generally have some small ruminants.

Human health is at risk in traditional small ruminant rearing practices when animals are allowed to roam freely and contaminate the household living space with excrement. The need for good hygiene practices extends all throughout the small ruminant value chain but begins at the household level where risks to families are significant. For small ruminant production near the home, parents and children alike must learn safe handling techniques and understand the health hazards when food and water gets contaminated with animal feces. Elderly persons, those with compromised immune systems, and newborns are particularly at risk. A REGIS-AG brochure on safe handling practices in collaboration with REGIS-ER and DFAP projects that have WASH activities will be developed in order to help raise awareness of the health risks associated with small ruminants in and around the household.

Under the CAADP Pillar II framework for agricultural development agreed to by all African countries under the NEPAD process, it can be said that smallholder producers of small ruminants in Burkina Faso and Niger lie

in Position 3, as through their local livestock markets they are integrally involved in the value chain, providing a large share of supply, and with the opportunity to have their voices heard through the local chapters of each national livestock association's sub-group on small ruminants.² They also participate in organized livestock markets, both as members of the association governing their home markets and as users of other markets to which they travel. Horizontal integration among smallholders is hampered somewhat by the image of small ruminants as "second-class citizens" in the livestock world. Small ruminant herders and traders face considerable challenges in order to move from Position 3 to Position 4, given their lower status compared with cattle and the very-poor conditions of organized markets for small ruminants. Their enabling environment is not inviting for investment in modern amenities, and their animals are worth less per head than cattle, so small ruminant herders and traders have less money to invest overall.

For Niger, the most important market is Nigeria, where the vast majority of Nigerien small ruminants (and livestock in general) are exported. Given Nigeria's large and growing population, as well as the internal population growth in Niger, future potential of small ruminant value chain is vast even if only the future growth in population, without considering ongoing and expected growth in incomes, is taken into account.

Small ruminant production, processing and marketing are also key enterprises in Niger's Tillaberi, Maradi, and Zinder regions, the focus areas of REGIS-AG. The three regions together have 69% of Niger's sheep and 62% of its goat population. Zinder is the largest sheep and goat producing region, Maradi the second in goats and third in sheep, and Tillaberi is the fourth largest producer for both species. Improving productivity, marketing and processing of the small ruminant sectors is therefore important for development in these regions themselves, but more widely, in Niger. The Niger value chain diagram is in Figure 3.

² According to the CAADP Pillar II framework, a smallholder producer may fit into 4 different positions along the value chain.

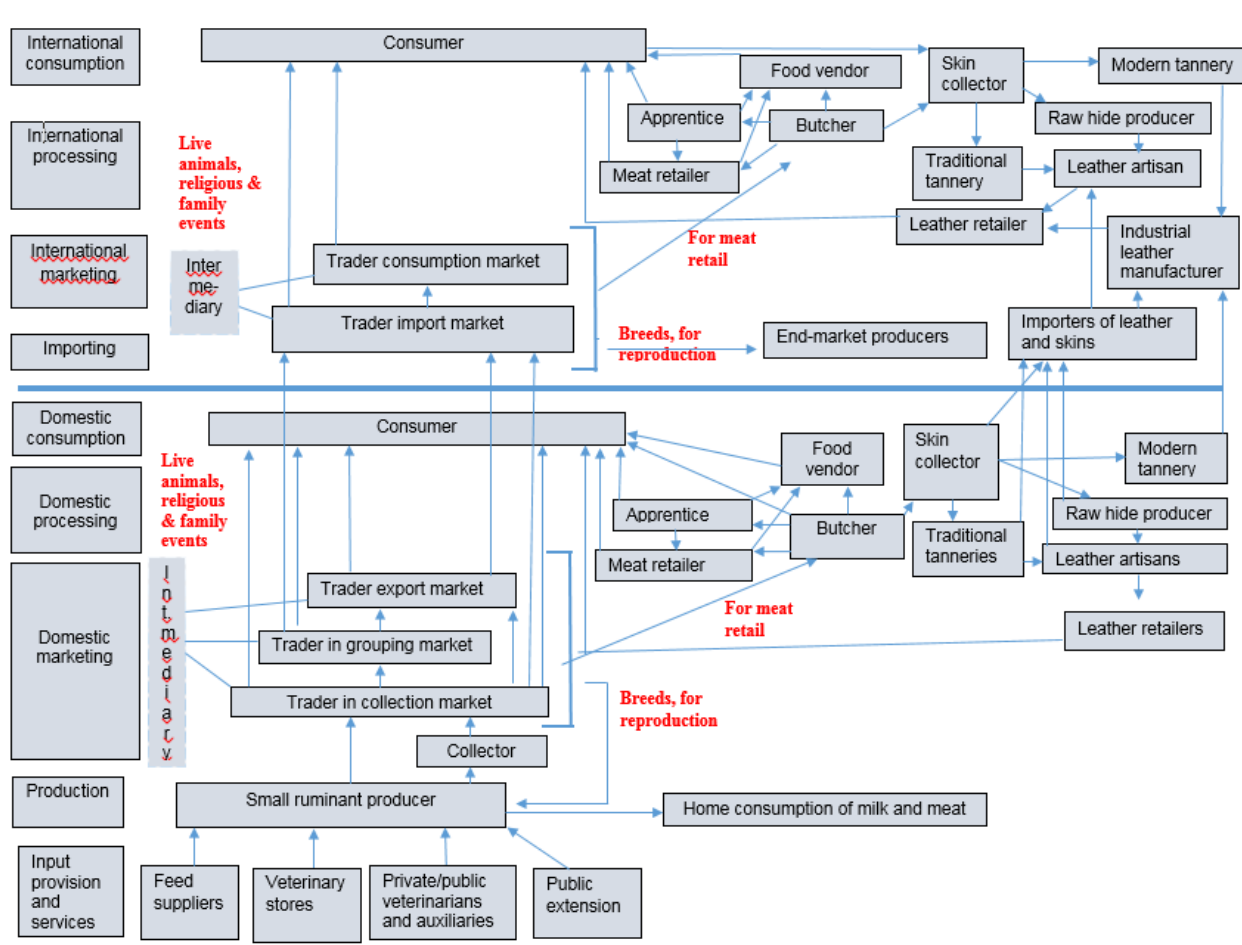
Position 1: Smallholders are out of the value chain, typically in the case of products with high quality requirements or strong demand for technology.

Position 2: Vertical Integration: Small farmers will add value to commodities without involvement in the management of the chain activities.

Position 3: Horizontal Integration: Small farmers are specialized in production and participate in the value chain management.

Position 4: Value chain co-owner: Small farmers develop ownership in the chain by promoting management activities and others along the chain.

Figure 3: Small Ruminants Value Chain in the Three Focus Regions of Niger



Source: REGIS-AG.

The small ruminant value chain has essentially three main segments:

- Live animals for household consumption, mostly in religious and family festivals such as Tabaski. Slaughtering commonly takes place outside of the abattoir; meat is consumed by households of medium and higher incomes, and their social circles. Poor households eat very little meat.
- Live animals destined for slaughtering in the consumption market, and sold as meat or meat products in the traditional markets, on the streets, or in higher end stores and supermarkets.
- Live animals destined for reproduction. This trade mainly takes place with the other animal trade but there are some traders who concentrate on this type of animal trade. It particularly focuses on two prized breeds in Niger, *chèvre rousse de Maradi* goat and Balami sheep.

All market segments can end in consumption in Niger or in export markets. They do exhibit differences in factors determining price, seasonality of markets, and value chain actors involved, among others (Table I). The first two segments, home consumption and live sales for meat, are the predominant activities and have been the main focus of analysis in the literature reviewed for this study, although mostly without clear segmentation. The third segment, raising Nigerien animals for reproduction, is less well understood, with more questions than answers regarding its extent, market trends, future potential, and the actors who specialize in it.

Table 1: Market Segments in the Small Ruminant Value Chain in Tillabéri, Maradi and Zinder

Segment	1. Sales of animals for home consumption, during festivals	2. Meat sales	3. Animal sales for reproduction
Criteria	Breed, size, meatiness, color (and in Nigeria only: sex)	Meatiness, price. Lower quality animals more likely to be sold for abattoirs in Niger.	Breed, size, health, color
Producer profile	All producers, particularly those doing fattening	Most producers.	Some producers, with focus on certain breed and/or high quality production.
Trader profile	All traders try to capture high volume and prices during festivals	Traders selling to butchers in consumption markets, often with credit.	Most traders occasionally; certain traders specialize
Other VC actors	Intermediaries, skin collectors, tanners, leather workers	Butchers, food preparers, retailers, skin collectors, tanners, leather workers	Traders, producers
Seasonality	Highly seasonal	Some seasonality	Some seasonality
Estimated market size (%)	25	65	10

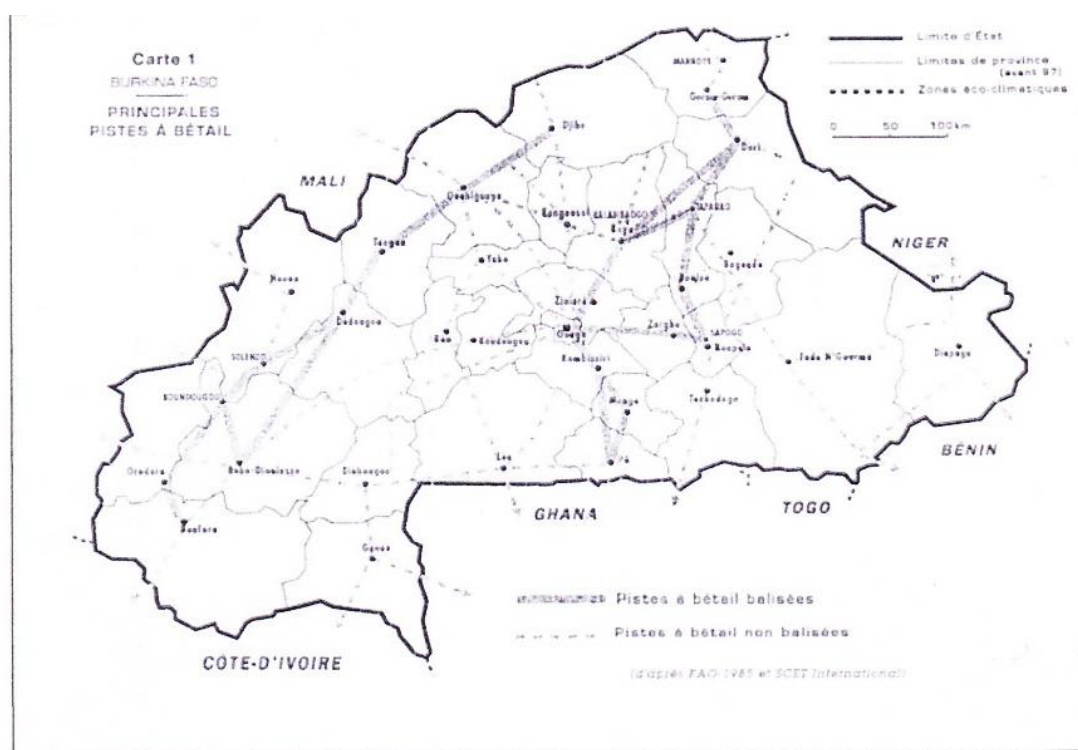
Burkina Faso

Burkina Faso has the third-largest herd of small ruminants in West Africa, after Mali and Niger. In 2012, the national Burkinabé herd was about 8.7 million head of sheep and 13.1 million goats with production concentrated in the Sahel region, Mid-West, and Mid-East (*Ministère de Ressources Animales*, MRA 2013). Its largest export markets are Côte d'Ivoire, Senegal, and Ghana. Burkina Faso is nearly the mirror opposite of Niger, with sedentary systems far more prevalent than transhumant systems.

Burkina Faso's livestock sector has a key role in the country's economic development, including improving food security and incomes of the poorest. Burkina Faso is the third-largest producer after Nigeria and Mali in the Economic Community of West African States (ECOWAS) zone and the second-largest producer in the West African Economic and Monetary Union (WAEMU, or UEMOA in French) after Mali. Burkina Faso is the second-largest exporter in terms of head per year in both regional economic communities (APESS 2015). Livestock's contribution to GNP was on average 19% in the period 2004-2011. In 2013, it contributed 11.3% of the GNP. The value of livestock exports has varied in terms of its contribution to GDP, according to the official national statistics, between 9.6% in 2010 to 16.3% in 2008 (APESS 2015). Despite growth in recent decades, livestock's contribution to the agricultural sector has been less than that of the crop sector, 28% vs. 57% (APESS, 2015). For Burkina Faso, as for West Africa in general, these statistics likely underestimate the importance of livestock in the economy, as figures on domestic consumption and external trade often underestimate the real flows, due to the prevalence of unofficial transactions.

For the livestock value chains, the annual growth rates are estimated at 2% for cattle and 3% for sheep and goats (MRA 2014 and UNDP 2011). The majority of the livestock is in Sahel, Hauts-Bassins, East, Boucle du Mouhoun, Center West and Cascades regions. About 82% of Burkinabé households have livestock, accounting for 39% of the revenues of rural households. The importance of livestock and the presence of herders and their families in certain agro-ecological zones is paramount. In the Sahelian zone of Burkina Faso, livestock contributes 69% of the rural household revenues.

Figure 4: Livestock Migration Routes in Burkina Faso



Source: CGIAR (2014).

Livestock is reared in different systems, but Burkina Faso is and probably always will be a transhumant country. There are many different kinds of transhumance, whether migratory, internal, external, or sedentary extensive, which move along the routes shown in Figure 4. According to Government statistics from 2008, 85% of livestock-rearing households could be considered as sedentary while practicing extensive livestock production, meaning livestock move around but only short distances and have a home base (MRA 2014 and UNDP 2011 *inter alia*, confirmed by CGIAR 2014). Of the rest, 8.8% of the animals are reared in classic migratory fashion, meaning they are transhumant, with cyclical movement of the majority of the herd, often across borders (Figure 5). Another 6% are in sedentary systems practicing semi-intensive agriculture, and 0.4% of the animals are in sedentary operations practicing intensive agriculture. The operations investing in intensive systems are much more likely to be in the formal sector, whereas transhumant operators and a good many of the semi-intensive operations remain informal, with their decision-making about when to buy and sell often quite different than those made by businesses in the formal sector.³

³ As many or all herders view their flock as a type of bank account, higher prices won't necessarily induce them to sell
CNFA

Figure 5: The Main Transhumance Route through Burkina Faso



Source: CGIAR (2014).

Transhumance is more commonly found in the Sahel region of Burkina Faso at 17-19%, whereas less than 3% did so in West Central and Center South. About 80% of livestock is in the pastoral system, which produces about 77% of the meat and 92% of the milk. During cropping season, in agro-pastoral areas most animals are kept away from the cultivated fields, and they graze in natural rangelands. As elsewhere in West Africa, conflicts between agriculturalists and Burkinabé pastoralists are increasing in Burkina Faso. In Burkina Faso, the Peul ethnic group tends to combine its small ruminant and bovine herds (FAO *Profil Fourrager: Burkina Faso*, undated-a).⁴

many animals, as only selling one or two may give the herder sufficient cash for immediate needs. With higher prices, the herder may figure his flock is now worth more and worth keeping.

⁴ CILSS' 2010 "*L'Elevage au Sahel et en Afrique de l'Ouest* notes these difficulties with the *lois, règlements* and *accords* related to transhumance.

"In practicing transhumance, each Country will endeavor to improve:

- the appropriateness of national legislation to local rural land realities;
- the diversity of the pastoral land framework and public perception of the importance of land issues;
- how pastoral systems, traditional operators, and other diverse actors fit into the system;
- the weakness of financial structures, human capacity, and material endowments to understand and benefit from the measures already in place;
- the weakness of the enabling environment.

The main constraints facing transhumance include:

- access to resources (water, pasture) and strong competition with other actors;
- control of rural spaces by local authorities empowered by the organization of rural areas into « *communes*»;
- free movement of people and animals in West Africa and attention to avoiding cross-border conflicts;
- environmental changes linked to galloping population growth in West African countries and to climate change ;
- development of extensive agriculture with the acceleration des improvements in agricultural amenities;



The breeds of sheep reared in the three REGIS-AG regions of Burkina Faso include Bali-bali, Djallonké and various mixed races, and for goats, the large Sahelian goat. The small ruminants in Burkina Faso mainly feed on natural pastures for 80-84% of their nourishment, with crop residues forming the only other significant (12-15%) source of feeds (MRA 2013). The amount of pastureland varies by region, with Sahel having the largest amount left, and Center North least. The three regions also differ in the direction of transhumance. After a good rainy season, the animals from the Sahel region are usually taken north, to graze on the large native pastures in Mali. After poorer rains, the animals are taken south where manure contracts are common, but the quality of the natural pastures is poorer and there are more likely to be conflicts with agriculturalists. From the Center-North and East regions, movement is mainly south to southwest. Animals reared in extensive systems commonly have low weights when slaughtered, at 16-21 kilograms for goats and 20-27 for sheep (MRA 2007).

The poorest families in Burkina Faso rely more heavily than anyone else on small ruminants as one survey showed 1.16 million households rearing livestock, 35% rearing cattle and 51% small ruminants (MRA 2007). The small ruminant value chains in Burkina Faso engage a large number of actors, many of them vulnerable, in the domains of production, vaccination, sales of forages and feeds in markets and towns, transport, trading, butchering, food preparation, and meat and food retailing. Even just cleaning up what is a messy business.

Small ruminant production, processing and marketing are key enterprises in the three REGIS-AG regions of Burkina Faso: Sahel, Center North and East. Sahel region is the top producer of both sheep and goats (as well as cattle), with 14% of the country's flock of sheep and 17% of its herd of goats (MRA 2014). Within Sahel, Sanmatenga province has almost half of the sheep and over 40% of the region's goats. Center-North region contains 11% of the sheep and 9% of the goats, with Seno Province having 39% of the sheep and 45% of the goats. The East region, which has 10% of the sheep and 11% of the goats in Burkina Faso, has Gnagna province as a particularly large small ruminant producer (39% of sheep, 47% of goats). Together, the three regions contain 35% of the sheep and 37% of the goat population in Burkina Faso. Improving productivity, marketing and processing of the small ruminant sectors is therefore important for development in these regions themselves, but more widely, in Burkina Faso.

Figure 6 shows the value chain diagram for Burkina Faso, while Table 2 discusses the different segments of the value chain.

- strong demand for agricultural land by foreign investors (CILSS 2010).

Figure 6: Small Ruminant Value Chain in Burkina Faso

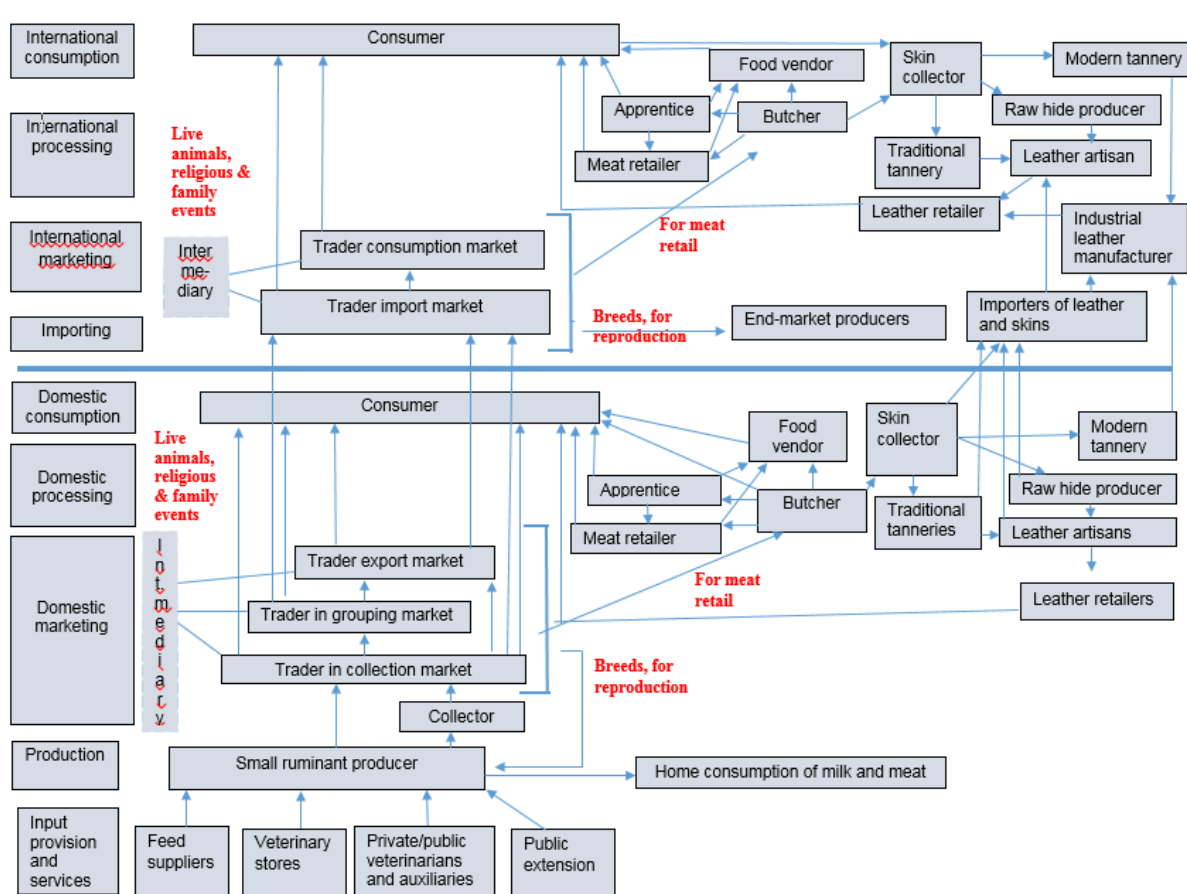


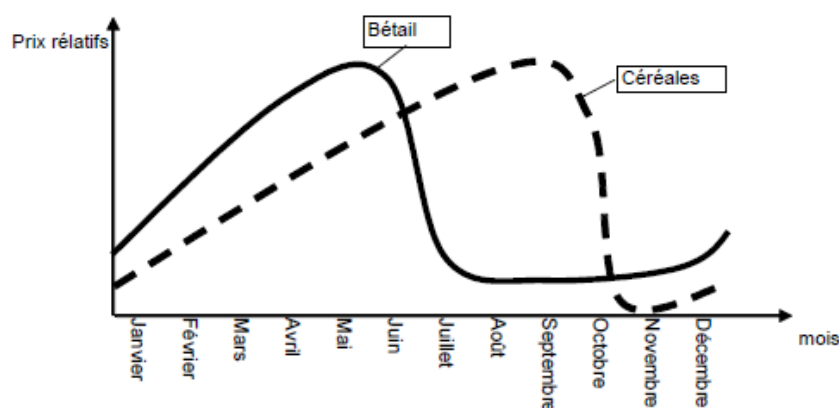
Table 2: Market segments in the Sahel, Center North and East Regions of Burkina Faso

Segment	1. Sales of animals for home consumption, during festivals	2. Meat sales	3. Animal sales for reproduction
Criteria	Breed, size, meatiness, color (and in Nigeria only: sex)	Meatiness, price. Lower quality animals more likely to be sold for abattoirs in Niger.	Breed, size, health, color
Producer profile	All producers, particularly those doing fattening	Most producers.	Some producers, with focus on certain breed and/or high quality production.
Trader profile	All traders try to capture high volume and prices during festivals	Traders selling to butchers in consumption markets, often with credit.	Most traders occasionally; certain traders specialize
Other VC actors	Intermediaries, skin collectors, tanners, leather workers	Butchers, food preparers, retailers, skin collectors, tanners, leather workers	Traders, producers
Seasonality	Highly seasonal	Some seasonality	Some seasonality
Estimated market	25	70	10

size (%)			
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As in Niger, in Burkina Faso there is a pronounced seasonality to livestock prices, with Figure 7 showing that livestock prices rise dramatically during the April to June period when food supplies are still abundant and farmers and consumers have more money. The annual peaks in livestock prices take place before the crest in price for cereals during the *période de soudure* or “hungry season” from July to late September.

Figure 7: Seasonality of Livestock Prices compared with Cereals



So

Source: CNFA. Note that livestock prices also peak at Tabaski, a religious festival that varies throughout the calendar year from one year to the next. When Tabaski falls in May or June, the peak of the curve above would be even higher.

The small ruminants value chain is under-studied in comparison with the bovine value chain. In a 2010 CIRAD livestock study for Burkina Faso, data presented for bovines are not equally provided for small ruminants. For example, the CIRAD report presents data on internal transhumance and external transhumance for bovines in Burkina Faso, but not for small ruminants. No breakdown is available either between the transhumant and resident populations of bovines.

ECOWAS has clear authority for region-wide harmonization of issues related to transhumance and to help resolve disputes between member countries. In October 2015, the ministers for animal resources for Burkina Faso and Niger, along with those from Benin, Togo and Mali, met to discuss cross-border transhumance issues (RFI 2015). An information exchange meeting was held in Burkina Faso in 2013 bringing together parliamentary representatives from all of West Africa to discuss pastoralism issues (Le Faso 2013). Niger and Burkina Faso signed a bilateral agreement on transhumance issues between themselves in 2003 (PanaPress 2015).

Processing

Meat

Most meat is cooked soon after slaughtering. Only some of the slaughtered meat goes into an appropriate cold chain, where chilling greatly reduces contamination or spoilage. Carcasses left to hang outside in the

heat after slaughter can pose significant health risks both to those working in the industry and the consumers eating the meat. Carcasses left lying down on a cutting table or chopping block for any period of time before rendering present even greater risks, as the table or block itself can quickly attract bacteria.

Meat is usually eaten after grilling, or after a long period of cooking in stews. There is very little differentiation in cuts, as meat is sold in piles.⁵ Thus, in the rendering and cutting of meat, both Niger and Burkina Faso lose out on significant value added.

The main stages of the processing segment of the value chain are slaughtering, meat cutting, presentation to end consumers for raw meat sales, and meat preparation for food vendor sales. Women have differing roles in the various stages of processing. In both Burkina Faso and Niger, as well as most areas of the end markets in Nigeria and other West African countries, butchering is not considered “a woman’s job” and there are no women in the abattoirs.⁶ An exception is in southwestern Nigeria, where in Ibadan’s main abattoir there are 10 women butchers in addition to 40 men. REGIS-AG found that there are also female butchers in Lomé, Togo and Abidjan, Côte d’Ivoire.⁷

- **Niger**

The main actors in the abattoir slabs are butchers (*patrons*) who purchase animals from traders who bring them individually or in herds, by foot or by truck. The most important consideration for the butchers in Niger is the overall price per animal compared with its meatiness. Calculations are not made based on the weight of the animal.⁸ The animals are only weighed once they are reduced to the carcass. There is a noticeable lack of scales in order to ensure proper metrology.

Butchers selling at higher-end markets in Niger can also purchase fattened animals. Animals are purchased in the evening and slaughtered the following morning, although in non-daily markets if a butcher has greater purchasing power, a butcher may purchase animals for more than a day and slaughter them gradually. All butcher interviewees in Niger said they use both cash and credit to purchase animals, but some butchers work only a cash basis and others only on a credit basis with established clients. Typically, the prices paid for meat bought on credit are more expensive, with the butchers reporting credit-based prices to be 10% to 20% higher. In all events, the credit is typically paid back the following evening, and the credit cycle continues afresh. The system works, somehow, most of the time, although discussions in the meetings of the *interprofessions* often involve the debt owed by one segment of the value chain to another.

Butchers understand that the higher-value breeds will go to export markets on the hoof and may therefore purchase an animal or two for the local market, in that way differentiating their range of products and having a higher-value product to offer. Butchers depend on confidence-based relationships with traders for credit, with little written down. Butchers work with a group of apprentices who help with the slaughter and meat cutting.

⁵ In French, “*des tas*”.

⁶ In the Muslim rituals, it is a man who sacrifices the animal.

⁷ The ATP/E-ATP project sponsored the training of butchers in Mali. Out of the 3 dozen participants, one was a woman, a non-Muslim of Lebanese origin.

⁸ Taking into account the difference between live weight and carcass weight. After the draining of fluids and removal of the head, hide and animal waste products, the carcass weight would typically be about 55% of the live weight. [*I’ve asked Dr. Seydou Sidibé, livestock expert with the West Africa Trade Hub Network, about this ratio.*]

Apprentices are often paid in kind, with the head and feet, but the butchers' expectation is that from the sale of these parts, the apprentices will pay the abattoir tax, which is the practice in Zinder. There may also be piecemeal workers who do cleaning up, usually with some kind of soap or ammonia-based wash. In Nigeria, where the skin is commonly sold with the meat and often eaten in stews, there are workers who do 'zinging' or scalding of the carcass to remove the fur. The abattoir operations end up with carcasses ready for sale or for further cutting.

There is one main high-value meat product, a local type of jerky.⁹ Nigerien dry meat, *kilitchi*, is well known for its flavor but is also often known for its poor preparation conditions, deterring greater sales in Niger and regionally. Higher-end *kilitchi* operations have been financed by PRODEX in Maradi and the Niger-based CESA-OA (Centre d'Etudes et d'Expérimentations Economiques et Sociales de l'Afrique de l'Ouest) has developed a meat-drying technique which won an Excellency prize in the 2013 Bobo Dioulasso international fair in animal-source products. *Kilitchi* has since been taken to Senegalese markets, where it has found success. Products such as this, based on good quality meat, provide significant value addition and could become important products for export also. REGIS-AG has worked with *kilitchi* producers and will be focusing on improving the health standards and quality of packaging to support this promising product be marketed to high potential regional markets.

In Niger, butchers sell carcasses directly to restaurants, supermarkets, and fast-food operators, and in retail either from shops or from tables, often using hired labor. From abattoirs where the carcass is weighed, the process from the butcher onwards involves prices being determined by the kilogram, not solely on visual determination, although the appearance of meat is important in all market segments. Butchers also sell to retail vendors who often simply walk around with carts to different neighborhoods. Butchers commonly give credit to those who resell the meat, whether in raw or cooked format. In Zinder, interest rates charged by butchers to traders range from 10% to 20%. Cash purchases of 2,500 FCFA (USD\$4.25) per kilogram would thus result in the vendor paying 2,700-3,000 FCFA (\$4.59-5.10) on credit terms.

Animals are slaughtered in unhygienic conditions on concrete floors where carcasses mix with waste and there is no separation of clean and unclean operations. Many abattoirs and slabs lack access to clean water. Few abattoirs have vehicles adapted to meat transport. Most carcasses are transported in the backs of pick-up trucks, on motorcycles, in taxis, or even on the shoulders of workers, often on bare human skin uncovered. Poor tools and poor knowledge of the maintenance of tools result in poor carcass dressing and meat-cutting practices. These constraints impact both the low- and high-end markets, although high-end butcher shops typically do the meat cutting themselves. Both butchers and food preparers lack access to cold chains for preventing losses and reducing risk.

In Niger, almost 70 % of small ruminant slaughters are not recorded and therefore likely take place outside of sanitary control (Fadiga and Fall 2014). These slabs have minimal infrastructure, typically just a floor where the slaughtering takes place. There is little or no differentiation between clean and dirty processes. The city of Maradi experiences a large influx of meat from slabs in the town and from slabs outside the town, but the authorities have started inspecting this meat at the main abattoir as a pre-condition for any meat sales in the city. In May 2015, the volume of this meat being inspected was one fourth of the volume of the meat slaughtered in the Maradi abattoir. This effort, in addition to sensitization campaigns and enforcement, has

⁹ The *filet* cut, which skilled butchers know how to extract, is mainly from bovine meat (beef).

been successful in reducing the share of sales of non-inspected meat.

For Niger as a whole, 79 abattoirs (60 controlled, 19 non-controlled) are reported for Maradi¹⁰, 58 for Zinder (38 controlled, 18 non-controlled) (*Ministère de l'Élevage* 2014). For Tillabéri, the data is incomplete, with 47 abattoirs reported. Maradi and Zinder towns have abattoirs with refrigeration, built in the 1980s with German funding, with the purpose of promoting exports of meat. The third refrigerated abattoir in Niger is in Niamey, an important destination and consumption market especially for Tillabéri's livestock. In all three abattoirs, the mechanized systems do not work. Maradi's 80-butcher abattoir produced 186.83 metric tons of meat in May 2014. Its capacity can handle 50 large ruminants (bovines) and 600 small ruminants daily, but in mid-2015 it was working on an under-capacity basis, at approximately 26 large ruminants and 200 small ruminants. Refrigeration is possible for 7 tons but is only used during peak times. The meat is stamped with a blue ink to show that it originates from the abattoir. Renovations funded by the World Bank are expected to initiate in 2016. The Zinder abattoir produced 1.98 metric tons of meat in 2014, at about 300 small ruminants and 17 large ruminants a day.

Horizontal linkages among the butchers seem particularly limited, with only some butchers organized and those often poorly. Apprentices are typically not organized, nor the food preparers. The *interprofession* is the venue to improve their standing. Slaughterhouses have some political heft, as important contributors to public sector funds through taxes and fees based on the number of animals butchered.

REGIS-AG field research in Niger showed there are certain differences between animals butchered in production areas and those exported. Animals butchered in production areas are commonly of inferior quality compared with those exported, presumably due to higher purchasing power in the coastal countries and the fact that weaker animals would not survive the long trips. In Niger, except for Zinder, more female sheep and goats are butchered in the Niger consumption markets, indicating the importance of dedicating rams to the religious and family events in Nigeria, the higher-paying market.

Butchers themselves are commonly grillers, and thereby add value. An average butcher shop may sell one to two sheep during one day, perhaps three during the month of Ramadan; high volume places may sell an entire cow and 10 sheep. As the price of grilled meat is currently around 5,000 CFA (\$8.50) per kilogram, the butcher himself can earn double the selling price of raw meat. The heads and feet are sold, cleaned and heads are included in soups prepared by women, some of whom may be spouses of the apprentices in those areas where apprentices receive these parts. Current prices for the head and feet are 4,000 FCFA to 6,000 FCFA for sheep, and 1,500 FCFA for goat.

- **Burkina Faso**

With its larger cities and denser urban population, Burkina Faso has a thriving meat value chain that generates value added for a large number of people, from producers, to traders, intermediaries, butchers and their apprentices, many of whom are also retailers of fresh meat. Men dominate in the meat value chain but women are important value adders in the areas of food preparation and sales. Many of the characteristics of the processing segment of the value chain mentioned above for Niger also hold true for Burkina Faso and vice versa.

¹⁰ The figures for Tessaoua *commune* are missing.
CNFA

There are only 5 refrigerated abattoirs in Burkina Faso, in Ouagadougou and Bobo Dioulasso, with one in private hands. Djibo, Kaya and Fada N’Gourma have abattoirs, although Fada N’Gourma’s abattoir has very poor infrastructure and resembles a slab. The local *services d’élevage* is responsible for authorizing the *abattages contrôlés* or controlled slaughterhouses, which have seen steady increases since 2006 (CGIAR 2014). Meat from abattoirs is transported with trucks, three-wheel motorcycles, and motorcycles to the towns. Outside of the capital, slaughterhouses in Burkina Faso are located in covered spaces often dating from the colonial period, with 45 abattoirs for drying meats of more recent construction (CGIAR 2014; UNIDO-IFAD-FAO 2012). Few of the country’s slaughterhouses meet international norms and standards. A large share of small ruminants pass through controlled slaughterhouses but are much more likely to be slaughtered in the household or village than a bovine animal.

The CGIAR value chain study on small ruminants in Burkina Faso notes that “the principal products for domestic demand are carcasses (from the slaughterhouses), cut meats (*boucheries modernes*), charcuterie products (whether prepared by butchers or *charcuteries modernes*), and grilled and dried meats (butchers or *charcuteries modernes*). One CGIAR recommendation is to find financing for an *abattoir* meeting international norms and standards in Bobo Dioulasso, near the best cereals-growing regions, which would facilitate fattening. An accompanying livestock market (*marché à bétail*) is proposed as well (CGIAR 2014).

The meat value chain employs a large number of individuals in Burkina Faso, often working as entrepreneurs in the informal or unofficial sector. Improved training and better access to finance for raw materials and equipment would allow them to become financially sound and expand their business. In each country, the butchers are organized in a national union that participates in the livestock *interprofession*.

In general, Burkina Faso’s slaughter figures are higher towards the end of the dry season and during the rainy season, and at the end of Ramadan. The post-Tabaski period is a stretch of low demand, perhaps a time for businesses to consider refurbishing and investment in cleaning and improvements.

Milk

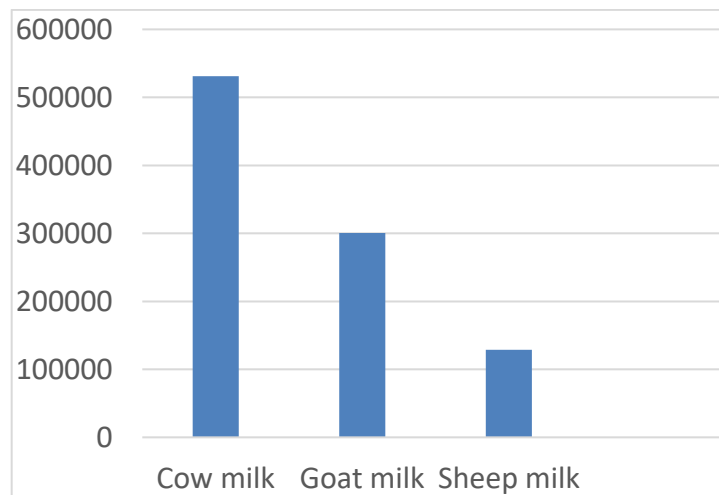
Sheep and goat milk production should not be a priority for value chain development under REGIS-AG due to difficulties inherent in collecting milk from dispersed animals each producing low volumes. Other issues relate to storage and food safety, as well as the need for sensitization of the “poor” and “very poor” on the significant nutritional impact of small ruminant milk in the diets of the poorest, including the pastoralists and their children. Integration of nutritional messaging in all projects working with small ruminant producers would further increase the positive impact of the milk consumed on-farm on the producing households. However, processed milk products such as dried cheese pose potential opportunities for investment.

- **Niger**

Goat and sheep milk is mainly used for home consumption among producing households, and especially among the pastoralists, as in the Peul and Tuareg communities both adults and children consume milk, especially goat milk. Among the Tuareg populations, when goat milk is in abundance it is also made into a dry

cheese. Otherwise, cheese is not a commonly found product in Niger. Goat milk is widely used as a substitute for mother's milk for infants, if mother's milk is not enough or available. It is also drunk by young children, including on the pasture ranges, even off the teat. The potential production of milk from the small ruminants is large, but difficult to estimate. According to official statistics, recorded cow milk production in Niger is greater than milk from sheep and goats combined (Figure 8).

Figure 8: Milk Production in Niger



Source: Ministère de l'Elevage (2013). In tons.

On the other hand, a Danish study from after 2010 showed annual production of all types of milk at 1.002 million liters, of which 486 million liters cow's milk. As a 2013 SNV report on camel milk production in the Tahoua region reported roughly 22,000 liters of camel milk produced there, local production of milk from sheep and goats would be around 500,000 liters (SNV 2013).

Local raw milk from all sources including sheep and goats was estimated to meet about 20% of Niamey's total milk consumption, with 10,000 to 20,000 liters per day in Niamey (ConDiv). Evidently, this includes auto-consumption of sheep and goat milk in the owner's household itself, as well as auto-consumed cow's milk. In a study on improving the milk collection system in Niamey, CFSI (2015) pointed to 3 industrial dairy operations, and many other semi-industrial or artisanal operations, never mentioning small ruminant milk.

The Danish study noted that Niger has a culture of drinking milk and products, at 63.8 liters per person per year, in contrast with only 17.8 liters per person per year in Burkina Faso. Reconstituted powdered milk off world markets is the base for 85% of all milk and milk products sold by dairy processors in Niamey (Condiv.dk).

We have not found any data on the volumes of small ruminant milk consumed in households, but as very little sheep and goat milk goes into processing, nearly all of the small ruminant milk produced can be considered to be consumed in the household or nearby, minus the small volumes used to make local goat cheese. In rural areas in particular, surplus sheep and goat milk a family might market is a barter good among neighbors, rather than sold for cash. There is no international trade in powdered sheep and goat milk. Locally produced goat cheeses face competition from European cheeses, and from substitutes.

The emphasis on bovine animals and relative neglect of small ruminants can be seen in the 2009 UNDP Human Development Report for Niger, which pointed to “insufficient assistance to other forms of animal production even though they are a source of substantial revenue for rural and urban households (sheep fattening, poultry rearing, cheese production, honey bees...).”

Development of the industry for processing goat milk is hampered by a large geographical dispersion of the herd, with a large number of animals each producing very little. Research by Rhissa (2008) estimated output of 140 kilograms annually reported for a productive *chèvre rousse* during 200-220 days of lactation. Ideal for nourishing herders’ families and local populations, to gather enough milk for substantial processing would necessitate large and expensive collection efforts. Given the migratory patterns, the largest herds of animals are more likely to be farther from the population centers. Kids and lambs are dependent on the milk and therefore, all the milk is not available for collection. Additional constraints are related to the cultural norms. Outside the pastoral communities, goat milk is mainly seen as milk for children and babies. Mini dairies interviewed by REGIS-AG say they need separate buildings for goat milk handling or otherwise the consumers would suspect it being mixed with cow milk. There is the danger, in seeking to expand small ruminant milk sales, that the casual and assured access of children to milk would be reduced if the household’s objective were to become to sell milk on a daily basis. This access is particularly important for the vulnerable households with only a few animals who lack alternative resources for good nutrition for children.

Instead of focusing on greater market orientation by milk producers, it is proposed that REGIS-AG focus on promoting the use of milk within the producing households for improved nutrition. This effort could take place in collaboration with health projects and be geared towards the women’s groups receiving small ruminants.

- **Burkina Faso**

In Burkina Faso, the small dairy industry is growing rapidly, commonly procuring from the edges of the cities (peri-urban areas), but the focus of the processors is on cow’s milk. Small ruminant milk is considered to be for home consumption, as is 4/5 of all milk consumed in Burkina Faso. Local yogurts are produced in Burkina Faso, but rarely from the milk of small ruminants. Artisanal cheeses sell well in the formal supermarkets and hotels in Ouagadougou.

Burkina Faso has seen a proliferation of milk processing units in the recent past, but most of what they process is cow’s milk. Between 2003 and 2012, the number of such units increased six-fold, from 27 to 164, and their production increased sixteen-fold, to 3.5 million liters (MRA 2014). A similar rapid increase was seen in the Sahel from 3 to 23 businesses producing 369,200 liters, and in the East, which went from 0 to 8 firms, producing 168,200 liters, but less so in the Center-North where increase was only from 4 to 6 at 167,200 liters output (MRA 2014). Almost all of these dairies focus on cow’s milk and a large part of the production is from July to November when milk yields are highest. In addition to dairies, there has been a proliferation of organizations involved in milk production, including COPROLAIT (*Coopérative des Producteurs de Lait*), *Les Tables Filière Lait*, and the *Union Nationale des Mini-Laiteries*.

Estimates for goat milk production in Burkina Faso have reached 50 million liters annually, but development of

wider uses for goat milk is faced with many constraints. Per-animal quantities are low. The quantities produced by the common Sahel breed vary from 0.14-0.59 liters per day in different studies, depending on supplementation. In a study by Gnanda *et al* (2005) in the Sahelian zone, goat milk yields were very low, 0.05-0.15 liters per day, only a few ounces. Given the small herd size, especially among the poorest, per-household production is in general very limited. The larger herds of animals are likely to be farther from the main population centers. Moreover, the goat kids and sheep lambs are dependent on the milk and therefore, all the milk is not available for collection. Additional constraints are related to the perishability of milk in the Sahelian heat as well as cultural norms surrounding goat milk consumption. Except in the pastoral communities, it is mainly seen as a milk for children or babies. Interviews with staff at mini-dairies suggested separate buildings would be needed for processing of goat milk, or otherwise consumers would suspect that the higher-value cow milk is mixed with the lower-value goat milk. Although production of cheese from goat milk would be an option, many mini-dairies consider that cheese making requires too much milk, and therefore increases price, so they often only do it by order.

Selling greater volumes of small ruminant milk might raise incomes among the poorest and most vulnerable, but one must remember its important and partly hidden role in the nutrition of producer households, particularly children. Currently, goat milk is almost entirely consumed in the producing households. Estimated consumption figures for rural Burkinabés were estimated a decade ago at 4.8 liters per year (Oudet, 2005). The casual access of children to milk during the small ruminants' lactation period easily is overlooked and underestimated but could be affected if an objective becomes to sell milk on a daily basis. This access is particularly important for the vulnerable households with only a few animals and who lack resources for good nutrition for children.

Hides and skins

- **Niger**

Niger has long had an international reputation for the high-value hides of the red goat or *chèvre rousse* with “intrinsically superior quality” which has been the subject of zoo-technical research since 1938 (PRODEX 2008). The skin of the *chèvre rousse de Maradi* is considered to be of exceptional quality with a deep and fine grain, dense and compact elastic fibers, and little fatty matter. As for the Bali-bali sheep, it is very tall with a firm hide not susceptible to ‘pilling’ that can reach 4 square feet. Niger also has very good bovine hides from the Bororo and Kouri breeds, which are tall with thick and heavy leather.

Niger has vast potential in its production of hides and skins from small ruminants, but the emphasis needs to be on high-quality tanning, whether based on traditional tanning or the wet-blue methods mainly destined for exports. In order to obtain the highest price for the high-quality *chèvre rousse* goat, collection of the hides should be segmented according to breed. Currently, most of the hides are exported as wet-blues such that the majority of the value addition takes place in Nigeria.

The three project regions in Niger are important processors of animal skins and leather products with 46% of national sheep skin production at 996,598 pieces in 2013, 27% alone in Zinder, and 56% of goat skin production at 1,835,322 pieces, with Zinder accounting for 30% of national output. The vast majority of the skins and leather from Niger, reportedly 80%, go to Nigeria's many tanneries, according to Rhissa (ME 2010). In Niger, skin collectors buy skins from butchers and, particularly after Tabaski, from consumers. The skins are

exported either in the salt-dried format or are tanned in Niger, and thereafter used in the country or then exported subsequently.

Zinder's state-owned tannery privatized in 1994 is now Tannery Malam Yaro. It used traditional tanning methods until 2001 when it upgraded into "wet blue" production, the most commonly traded category throughout the world. Although the tannery is no longer disadvantaged by Nigeria's subsidies for competing tanneries, the Zinder tannery is currently operating under capacity. With 33 permanent staff, it produces about 2,000 pieces per day in contrast to the 20,000 capacity. The tannery exports "wet blue" skins to India, Bangladesh on behalf of the Italy-based partner who re-imports to Italy finished products. Traditional tanneries are also operating in Niamey (Gamkalé), Tamaské (Tahoua) and Magaria (Zinder). An example of a traditional tannery is the large Gamkalé tannery in Niamey in a building built with funding from the EU country of Luxembourg. In all, there are 140 independently working tanners, who are part of an association, include both the *'titulaires'* and apprentices. Various leather makers buy from traditional tanneries or do the tanning themselves, then work on the leather. In Maradi in early 2016, the artisanal center was buying goat skins for 1,500-2,000 FCFA (USD\$2.55-3.40) and sheep skins for 2,500-3,000 FCFA (USD\$4.25-5.10). Prices vary by time of year and are reportedly particularly low after Tabaski and during the dry season.

Currently, a large number of the skins of small ruminants fail to capture additional value within the target regions as they are exported after only minimal processing. Other constraints to the leather industry in the target regions include the variable quality of the skins. Poor-quality skins can originate at every stage of the process, from production (due to skin diseases and injuries leaving scarring), transport and marketing (due to poor handling resulting in injuries to the animals), and processing (tears in the leather). The diverse problems can result in a high number of rejects and reduced prices. Additionally, the normal collection process mixes all hides together, and fails to capture highest value for skins, such as *chèvre rousse* skins which are supple and therefore fetch a higher price. Moreover, much of the traditional tanning does not result in exportable products. Seasonality in the offer of skins, with a very high peak in supply just after Tabaski and at the end of the year, makes it harder for tanneries to operate at full capacity year-round. Finally, many leather workers in Niger are not working at full capacity, as the security situation has deterred tourists, other expatriates and Malian traders who commonly used to visit to purchase Nigerien leather products. The poor quality of some of the tanned leather deters export markets, and many artisans lack knowledge of the export markets' demand characteristics and therefore the ability to process accordingly.

- **Burkina Faso**

As for Burkina Faso, there are currently only traditional tanning operations since the closure of the Tan-Aliz tannery, established in 1995 just outside of Ouagadougou, due to the 2014 political events. This has greatly limited the potential for increasing Burkina Faso's exports of skins and leather. Burkina Faso has numerous traditional tanning operations, some located in the project areas of Kaya and Dori, engaged in tanning skins mainly destined for Burkinabé handicraft markets or those in other West African countries. Ghana has traditional tanneries just across the border, in Upper West region, which reportedly buy both Burkinabé and Ghanaian small ruminant skins.

Modern tanning would generate profits for a diverse range of Burkinabé value chain actors, once the Tan-Aliz operation re-opens. In the project zones, there is the potential for increased output of

improved leather products from good-quality tanning. Both Kaya and Dori are known for their leather products, with each town specializing in particular types of products. Most of the products are made for Burkinabé consumers, but there is also a vigorous trade with other regional markets, particularly Mali. Increased quality would expand markets.

PRODEX studies in 2008 and 2011 made two clear marketing recommendations: development of a label for Niger's dried jerky known as *kilichi*, and a label for *chèvre rousse de Maradi* goat hides.

As the project regions of Sahel, Center-North and East are important producers of live animals, they are as well for skins and leather. The skins are collected by individuals or firms in the abattoirs or from households after the festivals. Various leather makers buy from traditional tanneries or do the tanning themselves, then work on the leather. Both Kaya and Dori are known for their leather products, with each town specializing in particular types of products. Most of the products are made for internal and regional market, particularly Mali. Women also produce leather products, specializing in certain items, such as poofs. Tanners point to lack of funds to be able to operate at full capacity.

Environmental Risks and Labor Issues

In digesting high-fiber forage materials, small ruminants emit substantial amounts of methane, a key greenhouse gas. According to FAO's analysis, West Africa has relatively high emissions intensity for small ruminants compared with global averages, due to low herd productivity caused by poor animal health and nutrition, including poor feed quality (FAO 2013).

Workers in live animal markets herd the small ruminants, which can result in trampling, while others accompany the animals in the trucks, having to balance on top of a moving truck. Many of the livestock markets have unsanitary conditions. Workers who wash carcasses, clean abattoirs and slabs, and transport meat and by-products are constantly exposed to unhygienic conditions. Butchers, meat sellers and cullers also operate in unhygienic conditions, and livestock traders, large and small, are disadvantaged and vulnerable to harassment by officials on the roads and borders. The 2014 CGIAR study observed that slaughterhouse operators and butchers do not take sufficient precaution in handling the resultant blood and fecal materials.

The incidence of physical risk makes it difficult for women to participate more fully in the livestock value chain. Many youth also take part in the care of small ruminants, including at the livestock markets, although this usually is an indication the children are not among those attending school.

The meat value chain employs large numbers of small individuals, often entrepreneurs working in the unofficial sector, with low recognition and little support. Improved training and better access to finance for raw materials and equipment would allow them to become financially sound and expand their business.

Disconcertingly, at the producer level, thefts are becoming a serious problem, especially in the East and North Center regions of Burkina Faso. Bands of robbers steal either animals or money from producers who have just

returned home after having sold an animal. Although it now mainly impacts the producers, its repercussions can impact the entire value chain. Risks in trading increase and suspicions among the value chain actors worsen about who within the value chain may be involved. Stakeholders commonly consider that young people, often led by wealthier and older leaders, are involved.

The advent of mobile money could be an effective solution for making payments on livestock transactions, particularly among livestock traders already possessing a bank account and thus more familiar with banking procedures. Cross-border banking is possible and used on an unknown number of transactions within West Africa, facilitated by the 18-country presence of ECOBANK, but there are always delays and hassles. Ghana has successfully launched the Z-Chip as a type of stored-value card that is widely used by consumers and vendors. As the main livestock markets in Burkina Faso and Niger are not located near where the banks are in downtown areas, a system of payments developed for livestock herders, traders, and processors would provide substantial *place efficiencies* as they would not have to travel into town and spend 2-3 frustrating hours at the bank. REGIS-AG could assist those with existing bank accounts to learn to use the system in a training-the-trainers activity.

Input Markets

The livestock value chains in both Burkina Faso and Niger rely upon a range of inputs, but the ones where REGIS-AG can best assist are in the markets for veterinary inputs and animal feed. Other inputs needing attention include the equipment and amenities on offer at organized livestock markets and operators' access to credit throughout the value chain. Finally, the high cost of water, another input in small ruminant production, was raised in many stakeholder meetings. Water is especially costly during the dry season when producers are dependent on purchased water.

Veterinary Inputs

The veterinary systems in both Niger and Burkina Faso are pretty similar, with long-established public sector veterinarians and a range of private sector operators offering different services. Both governments are trying to encourage the private sector to grow and expand, but there have been a number of constraints, including coordination and mobility.

There are notable differences in gender roles when it comes to veterinary care. Among the participants in REGIS-AG workshops in both countries, a large majority considered that it is the role of men to contact the veterinarian and a smaller majority that the man should administer the medicines to small ruminants. Producers, especially men, often consider that small ruminants (unlike large ruminants) have such low value that paying for veterinary care is not justified. The growing popularity of fattening may result in a change in attitudes, though, as producer interest is high and the benefits from investing in vaccination are evident.

In Niger, small ruminants are afflicted by numerous diseases in the project target regions. Across livestock species, the most serious ones in Niger are the sheep pox with an average of 710 cases annually from 1995-2010, Pasteurellosis with 586, anthrax with 194, and *peste des petits ruminants* or PPR with 155 (World Bank 2013). Actual economic losses from these diseases are not known, but several of the diseases end up being

quite costly (Fadinga and Fall 2014). In a study of small ruminants in Tillaberi and Tahoua, PPR prevalence was 42.0% in sheep and 47.9% in goats (Farougou et al 2013).

In Niger, veterinary services are currently provided by both private and public veterinarians. At the local level, the provision of services such as vaccinations, diagnosis and treatment is entrusted to a private veterinarian with an official mandate for that particular *département* or region. If there is no private sector veterinarian mandated for that *département*, the public sector veterinarian can be engaged in service provision. The private and public sector veterinarians work with auxiliaries who have either been trained in a one-year school program at the *Maradi Ecole des Surveillants d'Elevage*, where the prerequisite is a *Brevet d'Etude du Premier Cycle* (BEPC), or they may be trained by various development assistance projects. Both the veterinarians and the auxiliaries serving under them provide vaccinations and advice, conduct diagnoses and sell veterinary products such as vitamins, antibiotics, and deworming products. They also inform the public service if there are disease outbreaks. The majority of the project-trained auxiliaries have been trained using the approach and curriculum developed by *Vétérinaires sans Frontières* (VSF), one of the REGIS-AG partners, which selects local people trusted by their communities.

In Zinder, the biggest of the target regions for small ruminants, there is currently there is one full-time veterinarian with a network of 10 auxiliaries with whom he works. In total, there are an estimated 102 auxiliaries in Zinder who have been trained by projects funded by diverse donors and implemented by REGIS-ER, the Red Cross, Catholic Relief Services (CRS), Mercy Corps, and Save the Children, as well as the World Bank-funded *Programme d'Appui Communautaire II*. In Maradi, the next largest region for small ruminants of the three, there are three established private sector veterinarians, one each located in Dakoro, Guidan Roumji, and Mayahi with two other private veterinarians just starting business in Tessawa and Madarounfa. VSF has estimated a total of 241 auxiliaries in the Maradi region, with 60 men and 40 women located in Dakoro, 70 in Guidan Roumji (of which 31 are women), and 71 in Mayahi (all but 1 are men). Tillaberi has currently 4 private sector veterinarians and 176 auxiliaries.

During the annual vaccination campaign in Niger, only PPR vaccinations are done, although these are typically free and sometimes subsidized by the municipalities (*mairies*). The annual vaccination campaigns take place in the *parques de vaccination*, specially designed areas for vaccinations, or at the village level and are large communal efforts by the public and private sectors. There are an estimated 303 *parcs de vaccination* in Niger, but many are reported to be abandoned or in poor condition (Ministère d'Elevage 2014). In the 2014-15 campaign, 2.85 million sheep were vaccinated in the three regions, with large differences among the regions: 63% of the sheep population in Maradi versus only 30% in Tillaberi and 26% in Zinder (Ministère d'Elevage 2014). The variability was high also for goats: 40% for Maradi but only 12.9% for Zinder and 3.7% in Tillaberi (Ministère d'Elevage 2014). Of all vaccinations given, 93% were for PPR and 5% for pasteurellosis (with Zinder having the largest number).

Another measurable statistic related to veterinary inputs is the percentage of animals treated by a veterinarian, although the calculations are more complex, as they are dependent on disease prevalence. About 2.6% and 1.2% of Maradi's sheep and goats, 1.5% and 1.0% of Tillaberi's and only 0.95 and 0.5% of Zinder's were treated during the year (Ministère de l'Elevage 2014). Differences between sheep and goat treatment rates are likely due to goats' greater resistance to diseases and the greater share of fattening in sheep, as part of the fattening regime includes vaccination, deworming and multi-vitamins. Producers making the investment in

fattening presumably are more likely to call a veterinarian if the animal gets sick.

. As discussed, the network of private sector veterinarians is limited and regional coverage is uneven. Zinder, the largest small ruminant region, is particularly under-represented with only one full-time and one part-time veterinarian. The limited number of veterinarians also limits the number of pharmacies, and thereby access by herders and fatteners to good-quality medicines. One additional constraint in some regions is the still unclear division of labor between the private and public veterinarians.

In Burkina Faso, the privatization of veterinary services has given the private veterinarians a mandate for vaccination (*mandat sanitaire*) for a particular *commune*, but they can provide other veterinary services (diagnosis and treatment) wherever there is demand. Private veterinarians, when present, are expected to be the primary ones providing services, but as in Niger, the roles and responsibilities are unclear at least in some areas. In the East, private veterinarians are based in Fada N’Gourma (two), and one each in Bogandé (Gnagna province), Matiacoali (Gourma), Pama (Kompienbiga), and Diapanga (Tapoa).

Private and public sectors can work with auxiliaries who are of two types: 1) the voluntary village vaccinators, over 1000 of whom have been trained by PDAV to vaccinate poultry and small ruminants; and 2) the auxiliary vaccinators, trained by private or public services for purpose of sales of medicines and support during the vaccination campaigns. Some attain the status of *Agents Techniques d’Elevage*, who must associated with a veterinarian and can only vaccinate under the supervision of a veterinarian, and can only obtain the veterinary products from their supervising veterinarian. Their mandate covers all animals. The technical agents and superior technical agents are typically trained at the *Ecole Nationale d’Elevage* in Ouagadougou, which has a two-year curriculum for 80 students per year, half of whom are sent by the government and are being trained for civil service. Of the remaining 40 in each year’s class, some additional ones are typically hired by the government and only a few are hired by the private veterinarians. The VSF model for auxiliaries, i.e., diagnosis and treatment by auxiliaries trained for the purpose but with no prerequisites in terms of education, is only approved in Burkina Faso for poultry vaccination, not for small ruminant veterinary care. The responsibilities are limited to vaccination and to informing the veterinarian of any diseases they have observed. Price for vaccination is set per region and is harmonized between the public and private sectors.

The government vaccination campaigns are only for Pasteurellosis which is the major threat in terms of epidemics. In the Sahel region of Burkina Faso, it accounted for 15-66% of the epidemics in 2003-2012, and in six of those years, over 30% of the cases. For Center-North and East, the incidence has been much lower. In 2009-2012, the total number of these vaccinations of small ruminants in Burkina Faso varied between 355,500 to 425,000 per year, of which 34,000-64,000 in the Center-North, 23,000-108,000 in the Sahel, and 31,000-40,000 in East (MRA 2014). For Burkina Faso as a whole and for each target region, the vaccinations reached only a small proportion of the small ruminants. Vaccination coverages for 2014 were low, with only 2-3% (69,000-73,000) of the small ruminants vaccinated in the Center-North and East. Vaccinations for other diseases are at owner’s request. For *peste de petits ruminants*, there were 68 epidemics in the period, East accounted for 15, Sahel 9 and Center-North only 2 (MRA 2014). The large majority of producers in the three regions are reported to consider vaccination only for their large ruminants. The exception is animals for fattening, where vaccination is becoming more commonplace.

The annual vaccination campaigns in Burkina Faso take place in the “vaccination parks,” specially designed

areas for vaccinations, or at village level. They involve large efforts from both public and private veterinarians and their vaccinators. There are an estimated 236 parks in the Sahel region of Burkina Faso. Finally, deworming, an important practice in small ruminant production, was done in 2009-2012 for 67,000 goats and 111,000-199,000 sheep (MRA 2014).

Burkina Faso has a cadre of only 112 veterinarians (about half public, half private), a ratio of only one veterinary doctor per 280,625 animals, and only one livestock technical agent per 26,000 livestock farmers, and one livestock development advisor per 160,000 livestock farmers (Fadiga and Fall 2014). About 60% have been reported to be in Ouagadougou and Bobo Dioulasso, and there are very few in Sahel and the North. As discussed, the network of private sector veterinarians continues to be limited and with clear regional differences. An additional constraint in the enabling environment, at least in some regions, remains the still unclear division of labor between the private and public veterinarians

In both countries, the quality of auxiliary care is an area of concern, as there are wide differences in capability based on their level of education and training. Stakeholders stressed that whereas there are some excellent service providers among those with minimal previous education, in general, service provision is better among those with more education. Once support from a given project ends, auxiliaries will need to build up their businesses through meeting the needs of a sufficient client base. For some auxiliaries, skills at networking with farmers are rather limited, resulting not only in poor revenues for them but also poor service provision for the producers. There are only few women who provide veterinary services, and those that are active are generally vaccinators rather than higher-level professionals.

Mobility is a constraint on the rendering of public and private veterinary services in both countries due to the poor quality of many roads and the reliance on private vehicles, for which producers typically compensate only the fuel cost. Of the 10 auxiliaries affiliated with the veterinarian in Zinder, only three have motorcycles. Insecurity, particularly in the eastern parts of both countries, limits movement. The mobile telephone may be the most effective way of communicating to the farmers what to do, so long as the veterinary official can grasp the situation sufficiently from remote to propose a solution.

Animal feed

The animal feed sector is greatly underdeveloped in Niger, but better developed in Burkina Faso. Stakeholders in the small ruminants value chain seem to have learned the benefits of feeding the animals before selling them for slaughter. Another factor contributing to greater feeding is reduced land availability in the pastoral zone due to increased human and animal populations and the migration of agriculturalists into the pastoral zone.

Use of crop residues (millet, sorghum, and maize, groundnut and cowpea) and native plants (where available) has greatly increased in Niger in recent years, sold as feeds in markets and by mobile feed sellers. Government projects have promoted the use of and have distributed small mills for grinding cereal residues, which can then be mixed with higher quality materials. Stakeholders estimate that virtually all residues are already being used as feed in Maradi, with less comprehensive use in Zinder and Tillabéri. Harvesting crop residues from the fields provides an extra source of cash income for farmers, and helps improve availability of animal feed materials, both sorely needed. The downside is that removing the crop residues from the fields reduces ground cover, increases soil temperature and increases loss of topsoil. An interesting analysis would

be to study the relative advantages and disadvantages for a farmer to allow animals owned by a herder or another farmer to graze the fields, either for pay or barter, or to bring the crop residues home for his or her own animals.

Fattening of sheep is becoming widespread. It commonly consists of a 90-day regime involving veterinary inputs such as vaccination, deworming, and multi-vitamins, and providing a variety of feeds like bran, crop residues from legumes such as cowpea, cereals such as sorghum, millet or maize, and at times cotton seed cake. The fattening operations also limit the animals' mobility. Stakeholders estimate that about 60% of the producers in Maradi do fattening and 70% in Zinder and Tillabéri.

Women are important actors in the raising of small ruminants in both countries. Women participate in most production tasks and commonly fatten animals, partly due to the fact that much of it happens near the home, partly due to the prevalence of projects that have encouraged and supported fattening efforts by women. Gender roles in small ruminant production are not strict and most tasks are done by either the woman or the man in the household (USAID REGIS-AG 2015b). Women groups work together in various enterprises and are commonly engaged in fattening. Common management involves credit, animal purchase, at times feed purchase, and animal sales. Nevertheless, when it comes to the gathering and preparation of forage materials, almost half the REGIS-AG participants in workshops in Niger considered that men control the fields where the forages are grown.

Participants in REGIS-AG workshops in Tillabéri estimated that five out of seven fatteners are women. Maradi stakeholders estimated that twice as many women as men do fattening and that in Zinder there are four women to every three men doing fattening. One recent study noted that in Burkina Faso as well, the fattening of sheep is an important activity of women groups (Wageningen 2014).

Domestic feed production is low in Niger, for various reasons:

- Two state-owned feed factories are located in Niamey and Zinder and have mainly produced poultry feed in the past. However, both of the facilities are in disrepair - the factory in Niamey operates at very low capacity and the Zinder factory is practically closed. The government is reportedly exploring privatization to revitalize the two factories (Ministère d'Élevage 2014).
- The current closure of the cotton gin further reduces domestic feed production, as polygastric animals can usefully digest cottonseed meal.
- Wheat bran is available for purchase from Moulin du Sahel, which is also considering more diverse feed production, including for small ruminants.
- The PRODEX project has supported the establishment of feed shops in each region, run by an individual or a group.

In Nigerien towns, foreign-sourced feeds such as bran and cotton seed meal cake from Nigeria and Benin are available. However, they are considered expensive and their prices surge during dry season when demand is highest. For feeds imported from Nigeria, traders report problems with Niger's Customs service.

In Burkina Faso, the fattening of sheep is becoming an important enterprise in all zones. The Burkinabé fatteners typically usually use a 130-day routine, longer than in Niger, with sheep increasing weight from 25 to 35 kg (MRA 2014). Most operations, done by small producers, are small in size, commonly consisting of only one to

five animals. Fattening is also done by traders and women's groups, typically near markets. A study focusing on fattening in the west of Burkina Faso found that producers search for small ruminants with good physique, large size, good health, color (with white preferred), age (from 1 year to 2.5 years) and specific breeds, whether Bali-bali or mixed breed (Sanon and Traoré 2014).

In Burkina Faso, the animal feed industry is better developed than in Niger. Burkina Faso has much greater production of suitable cereals and feed manufacturers are located in the southwestern city of Bobo-Dioulasso near the best cereals regions and in Ouagadougou, the center for demand. Although access to complementary feeds in Burkina Faso is in general better than in Niger, the cost of feeds continues to place a great obstacle to their wider use. Unlike Niger, Burkina Faso has a wider range of feeds available internally and they are widely available in the markets in Burkinabé towns.

In operation since 2013, the Société de Fabrique d'Aliments pour Bétail (SOFAB-SA), which is located in Koubri, about 30 kilometers from Ouagadougou, has goals to reach production of 100,000 tons per year of compound feed. There are seven relatively large firms producing 87,000-110,000 tons per year of cottonseed meal cake, and taking into account small cottonseed oil-producing units, total cottonseed meal cake production is about 150,000 tons annually. Some of the Burkinabé cottonseed meal cake is exported out of the country, including to Niger.

Access to animal feeds is greatly limited by their price. The prices of crop residues, by-products from factories, and even forage materials collected from open range land more than double when they are needed most during the dry season. These feeds are most available in the markets in towns and therefore, transport to villages increases prices further. REGIS-AG stakeholders asserted that some women are active in feed provision. Cost, rather than availability, seems to be the key constraint at least near the population centers since feeds are available in the markets.

An opportunity exists through public sensitization to encourage producers to plan for greater small ruminant feeding in anticipation of increased demand for animals for exporting in an effort to target Muslim and Christian holidays. While animals are not weighed on a scale when they are sold, but are rather given a value by visual observation, larger and healthier animals with more muscle meat do fetch more money.

Marketing

There is a sophisticated network of organized live animal markets in both Burkina Faso and Niger. Fada N'Gourma in Burkina Faso is the largest animal market in West Africa. Herders and traders move animals both on foot and in trucks in a continuous flow from north to south. As mentioned above, cross-border migratory herding can be seen as a growing constraint due to increased competition for natural resources and these transhumance flows also impact commercial marketing of animals for sale (IRAM 2014).

These markets typically operate once a week although consumption markets can be open every day. Marketing initiates when collectors (typically working with funds from a trader) or small traders (typically with independent funds) go to villages to buy animals or producers bring them to the markets. From small markets, the animals are generally bought by bigger traders through successive transactions ending at

consumption markets in the region, elsewhere in the country, or abroad. Evaluation is done visually at every stage. A good number of traders also do fattening; in Zinder, it was estimated that 20% do fattening.

The livestock markets are typically run as a separate organized business more or less regulated by local municipal officials and overseen by local branches of the animal resources ministry. Herders and traders pay to have their animals enter the market, which helps provide funds for the maintenance of the market itself. The fees for each animal brought to market is typically 100 FCFA (USD\$0.17) and when it is sold the seller pays an additional 300 FCFA and the buyer pays an additional 200 FCFA.¹¹

Some of the markets lack basic infrastructure that would likely increase volume and thereby further tax income. The ATP/E-ATP project studied livestock markets in several countries, including Burkina Faso and Niger, finding that each one visited had numerous needs in terms of equipment such as loading ramps, water supply, and feeding troughs. In addition, livestock markets in both countries have yet to fulfill their potential as centers of information where traders can find information on prices in other neighboring markets or find quotes from suppliers for needed services such as trucking.

The advent of the cell phones has revolutionized the speed which with information on prices, demand and offer can be transmitted, although many traders mention that the arrival of other traders coming to market as an important way to receive market information.

In terms of marketing advantages, Burkina Faso is relatively flat, with good road connections between its main cities. Burkina Faso is also strategically located in close proximity to numerous coastal countries, which gives it advantages in livestock trade. Besides lower transport costs, Burkina has been able to successfully shift markets when needed, as happened during the Ivorian civil war when Burkinabe traders successfully increased markets in Ghana and in Nigeria. Current livestock exports from Burkina go to many countries, including Cote d'Ivoire, Ghana, Togo, Benin and Nigeria.

The REGIS-AG project area in Burkina Faso includes several large markets. Fada N'Gourma is a large export market, especially to Nigeria, with impressive infrastructure. Djibo has a busy export market frequented by many Ghanaian, Ivorian, and Beninese traders for small ruminants and by Nigerians for large ruminants, and which also receives animals from Mali. Although the city of Pouytenga is not located in the three focal regions, it is on route for small ruminant exports from the Sahel and Center-North, and is an important export market for diverse countries.

As throughout West Africa, there are very few meat exports out of Burkina Faso. The only company exporting now is the *Charcuterie Moderne*, located in the Ouaga 2000 neighborhood of Ouagadougou. They sell small ruminants, and beef, particularly to Gabon, but also to Cote d'Ivoire and Nigeria. Transport is by plane, which though rapid, raises a number of issues, including the high cost of transport. This reliance on air freight increases uncertainty due to cargo weight limits, as the exact amount that can be transported is often not settled until after the meat is already at the airport.

¹¹ In some markets, a representative of the municipality or *mairie* is involved in collecting the market fees.

As for Niger, distances are greater between the principal cities. Export demand from neighboring Nigeria dominates national market demand, especially for Eastern Niger. Zinder stakeholders estimate that 80-90% of the Zinder region's exports go to Nigeria, with the rest going to Benin. From the Zinder town market, an important consumption center, the association president estimated that 50-60 % goes to Nigeria. The presence of Nigerian traders in the market has a great impact on prices in Nigerien markets. Traders interviewed by REGIS-AG repeatedly remarked that market demand is high only when Nigerians are in the market; their presence can increase prices by 5,000 to 10,000 FCFA (USD\$8.50-\$17.00) per animal. For Tabaski, even women from Benin come to Niger to buy small ruminants.

Corruption on the roadways raises the cost of livestock marketing in both Burkina Faso and Niger as truckloads of animals typically must pay 5,000 or 10,000 FCFA at official checkpoints in order to pass through each town (USAID ATP/E-ATP 2010a). Truckers carrying live animals often choose to drive at night, above all to avoid stress on the animals from the hot sun, but also because at night many of the checkpoints are not manned as regularly as during the day. Convoy services are sometimes needed to ensure safe travel through turbulent districts. Most transactions take place in cash, causing another problem, especially due to the lack of easy transfers from Nigeria to Burkina Faso. Given Nigeria's security concerns, traders bringing animals there worry for their safety. The section on the regional enabling environment in the End Market Assessment below discusses other barriers to trade encountered on the roadways.

The condition of the trucks in Burkina Faso and Niger is not conducive to safely transporting live animals, as there are frequent mortalities and broken limbs as animals are loaded and unloaded or bounced around during the ride. The West African Trade Hub Network has designed a type of insert to go into the truck beds to better separate the animals and as of mid-2015 was looking to build a prototype for a cost-benefit evaluation (DFID 2015). A 2010 study on regional transport issues related to livestock by the prior Trade Hub noted that trucking costs throughout the region are unnecessarily high due to the system of national quotas and the lack of a *bourse de fret* or auction market for trucking services in each country and for the region as a whole (USAID/WATH 2011).

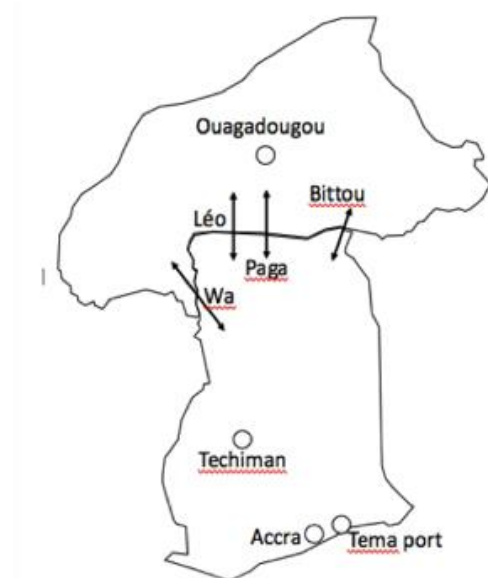
The railroad between Ouagadougou and Abidjan is a frequent method for Burkinabé livestock traders to transport live animals, although not the main mode. During the 10-year civil war in Côte d'Ivoire, when the northern part of the country was controlled by a different armed force than the southern part, harassment on the roadways increased greatly, affecting Ivorian imports from Burkina Faso and Mali in particular and making the railway a more attractive choice.¹² The plan to build a railroad from Niamey to Benin's capital Cotonou could likewise spur a new mode of transport for small ruminants from Niger, which is the largest exporter of cattle and small ruminants within the 8 countries of UEMOA (World Bank 2015).

Substantial numbers of small ruminants still move within each country on foot, both for transhumance purposes and also to bring them to market. It is common to see donkey carts full of 30 or 40 small ruminants with their legs tied at the Bitou border crossing leaving Burkina Faso on the direct road from the large livestock market in Fada N'Gourma to markets in Ghana and Togo (Figure 9). Small ruminants may also be brought to market by motorbike, on the roof of public buses, or being led on foot by their owners.

¹² The West Africa Trade Hubs, the ATP/E-ATP project and the Mali-IICEM project provided ample evidence of this.
CNFA

When meat is transported, usually only within short distances, it goes on trucks, in the back of cars or taxis, on three-wheel motorcycles, or on two-wheel motorcycles to the retail spots. Maradi has one truck for transport of meat but the refrigeration unit in it does not work. The Zinder abattoir also has a refrigerated truck for transport at a modest cost to use but many butchers, wanting to reach market early, hire motorcycles. In most places, transport is done with vehicles that have not been dedicated to meat transport.

Figure 9: Major Crossing Points between Burkina Faso and Ghana



Source: DFID 2015.

The markets bring together producers, traders and intermediaries. Lacking strong, market-oriented organizations, producers usually sell as individuals in the market place, and traders usually trade as individuals with varying degrees of collaboration among traders who trust each other.

The trader is a key source of credit downstream, particularly for butchers in the consumption areas. The traders interviewed in both countries admitted never really exploring the possibilities for upstream credit, that is, loaning money to producers.¹³ Most traders thought it would not work, as the producers might engage in “side-selling” and not honor the sales agreement. Lack of finance throughout the marketing chain results in little innovation to improve the quality of supply, and is a constraint on the introduction of improved feeds, housing and animal health.

An ever-present feature of markets in both countries, intermediaries known as “*dilalis*” can be either “official,” paying the municipality or *mairie* an annual license to operate in the market, or “unofficial” and operating without a license. The intermediaries serve multiple functions in the market place, including: negotiation on behalf of the seller; witnessing the trade; and sometimes giving lodging and food to the seller. Some intermediaries are also traders or producers. Most markets have fixed price fees for intermediaries. *Dilalis* also

¹³ In Djibo, however, the team interviewed a woman who is a cattle trader and dairy owner, who during the dry season had given feeds for credit to women supplying the dairy with milk. Her explanation was simple—otherwise she would not have gotten any milk from them.

often have their own organizations.

In REGIS-AG interviews, stakeholders complained of unofficial, hidden linkages between the traditional “stools” or established businesses in a given market and the intermediaries. Others suspect collusion between the intermediaries and the *mairies*. Producers commonly complained of perceived double-profits by the intermediaries, from the fees and from differences in real sales prices and the sale price communicated to the producer. Most producers lack the types of networks possessed by traders and intermediaries which allow them to assess demand and know prices.

Gender norms in marketing are pronounced. In both countries, it is considered a taboo for women to go to the livestock market and typically, women ask their husbands, sons, or brothers to take the animals to the market or they themselves give them to the intermediaries. During one workshop in Burkina Faso, 17 out of the 18 stakeholders considered that it was the role of the man to take animals to the market. As a consequence, there are very few women in the livestock markets, or they are in the background, selling forage materials or feeding the animals.

Going forward, REGIS-AG can helpfully promote new models for marketing. Producers will need to increasingly see themselves as a market actor, thereby becoming better at producing for the market and giving them greater market power in the face of the perceived dishonesty by the intermediaries during the livestock sale. Rural livestock producers are typically at a disadvantage, lacking the personal connections that the traders and intermediaries as well as basic information on daily prices. This is especially the case with women, a point raised in the Fada N’Gourma stakeholder meeting organized by REGIS-AG. Traders either reside in the market or trade frequently with certain specific markets. The intermediaries are always at the market.

One evident weakness in the present marketing chain in both countries is that is an overly long chain where costs accumulate, whether from official fees or taxes, fees for intermediaries, the margins for traders, and the costs from successive transport and loading and offloading. Although any individual buyer or seller in this chain can lose or win, the typical margins are considerable and add avoidable cost. Direct contracts with traders in consumption markets could reduce the length of the marketing chain, but these have proven difficult to arrange, as was the experience during the ATP/E-ATP project.

Beyond live animals and meat, the marketing of inputs into the small ruminants sector is typically oriented around the formal livestock markets and around agro dealers in the cities and larger towns who sell compound animal feed, nutritional supplements, and some veterinary products. Official state veterinarians and private sector veterinarian professionals rely upon the animal health departments of their ministries and on their own small-scale distribution networks to obtain more sophisticated medicines and vaccinations.

A major drag on export marketing is the export taxes on live animals imposed by both of the REGIS-AG countries. Burkina Faso applies a significant per capita tax on exported livestock to have those value chain actors help to finance its *Fonds de Développement de l’Elevage* or FODEL. The FODEL export tax, ostensibly to benefit the livestock development fund, may be quite difficult to tackle, as the issue involves internal budget considerations and is sensitive politically. The level of the FODEL tax on each head of cattle is 3,000 FCFA for sheep and goats 250 FCFA per head (USAID ATP/E-ATP 2010a). It is collected at the point of departure by the Burkinabé Customs officials, which encourages livestock traders to use non-official crossing points to

avoid the tax.

The USAID ATP/E-ATP project identified the FODEL export tax as an unfair barrier to livestock trade within the region. While export taxes are not permitted under the rules of UEMOA, ECOWAS and the WTO, there is a bit of a gray area when the tax is intended to develop a key sector in a least-developed country.¹⁴ Unfortunately, based on information from 2010, the money collected for the FODEL was not being spent on the sector, and so 60% of the FODEL funds were being diverted to the general Burkina Faso budget.¹⁵

Like Burkina Faso, Niger also has an export tax on live animals leaving the country, this one designed to fund the collection and dissemination of information in those value chains. Niger's export statistical tax is applied on small ruminants at a rate of 3% of the "mercurial value" per animal (USAID ATP/E-ATP 2010a).¹⁶ If an animal from Niger traverses Burkina Faso for onward export to Côte d'Ivoire, Ghana, Senegal or Togo, then that animal is assessed both Niger's export statistical tax and Burkina Faso's FODEL. These seem like ill-advised schemes for both countries to have in place, as both countries have expressed their interest in improving the competitiveness of their livestock exports.

End Market Assessment for Small Ruminants

One of the REGIS-AG contract requirements is to conduct end market assessments for small ruminants in the domestic markets of the two REGIS-AG countries and in their principal potential export markets. The *current end markets* are the national markets for Burkina Faso and Niger themselves, as well as their vigorous trade with ECOWAS partner countries Côte d'Ivoire, Ghana, Nigeria and Senegal and lesser neighboring ECOWAS markets such as Benin and Togo.

Driven by a large and quickly growing domestic and external demand, small ruminants present an opportunity for a large number of Burkinabé and Nigerien value chain actors to earn income and improve food security through production or value addition.

National End Markets in REGIS-AG Countries

In West Africa, small ruminants have a very high price elasticity of meat demand (Fadiga and Fall). In the 2 largely Muslim REGIS-AG countries, the high point of demand is in the weeks leading up to the annual Muslim festival Tabaski or Eid al-Adha, whose timing varies within from month to month during the Gregorian calendar year. Other purposes for purchasing live animals include various important family festivals, such as marriages and naming ceremonies, end-of-year celebrations at the New Year and Christmas, and other celebrations such

¹⁴ Export taxes penalize a country's productive sector, rendering them less competitive internationally. Export fees related to sectoral development are not necessarily prohibited, and can even be a good thing, if the funds are well-managed and actually devoted to the stated purpose. This is the case if the resulting investment improves productivity to a greater extent than the harm to competitiveness from the export tax.

¹⁵ Making the FODEL a blatant export tax and therefore highly objectionable.

¹⁶ The "mercurial value" is not the actual value of the traded good but rather a notional fixed value, making it easier for Customs officials to assess at the borders. Evidently, Niger last updated the mercurial values for its export statistical tax in 1999.

as birthdays and anniversaries.

At Tabaski, trading volumes are very high. Second, prices per animal also increase considerably. Third, particular importance is placed on buying premium animals, defined by the buyer based on his or her disposable cash. This emphasis on premium animals is also for animals purchased for special events, but, whereas for Tabaski, rams are the most bought animals, for the other uses, both sheep and goats can be used, depending on the tradition.

As mentioned in the Value Chain Assessment above, the end markets for both Burkina Faso and Niger are well-integrated into the rest of the West African livestock and meat market. Therefore, the end markets for each country not only include domestic demand but also include substantial exports of live animals on the hoof.

Unusual Characteristics of Small Ruminant Exports from Burkina Faso and Niger

- Animals taken across borders are not all for sale. Part of the migratory herds are sold in the coastal markets (in normal years, mostly young “finished” males), and part are brought back to the grazing areas for wintering (the breeding animals and young females);
- The flows fluctuate significantly throughout the year due to irregular supply and demand and religious holidays (especially for sheep);
- Travel on foot makes it easier to avoid border checkpoints, and therefore being recorded.

Source: IRAM (2014).

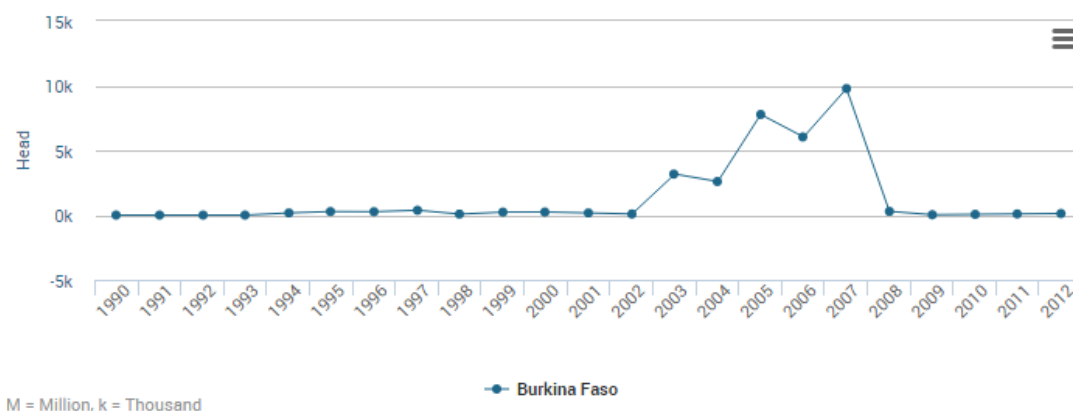
Burkina Faso

For Burkina Faso, the largest end markets for small ruminants are the two main cities, Ouagadougou and Bobo Dioulasso, and the population centers in the coastal countries Ghana, Cote d'Ivoire, Nigeria, Benin and Togo. By far the largest share of the uncooked meat is sold in the traditional markets where price considerations are very important for the majority of the consumers. This market segment includes everyday meat purchases by households, food vendors and diverse restaurants, as well as household purchases for special events in areas where purchase of a live, whole animal is not a tradition.

Burkina Faso only has two large urban consumption centers for meat, Ouagadougou (1,626,951 inhabitants in 2012) and Bobo Dioulasso (537,728). The remaining eight largest towns have between 43,000 and 94,000 inhabitants, thereby constituting relatively small consumption centers. Only two of them are in the project zones, Kaya (69,000) and Fada N'Gourma (51,000). In all, the ten largest cities have 16% of Burkina Faso's population.

Even considering that rural per capita meat consumption rates in Burkina Faso are likely lower than urban ones, it is clear that the majority of Burkina Faso's domestic consumption of meat takes place in the rural regions and therefore is likely never traded. Domestic demand is met nearly entirely by locally reared livestock, as there are few recorded imports outside of a blip in 2003-2007 (Figure 10).

Figure 10: Small Ruminant Imports by Burkina Faso



Source: FAOSTAT.

As much of the small ruminant slaughter is not done in the controlled abattoirs, consumption figures for meat are unreliable. For 2011, according to the MRA estimates, consumption was made up of 67% of sheep and goats, 27% cattle, and 7% from pigs (Fadiga and Fall 2014; MRA, 2014). For the Burkinabé, meat consumption, including small ruminants, is important and growing. Meat consumption in general has increased in Burkina Faso from the 1990s to 2000s. In the urban areas this increase was from 6.5% to 8.9% of income, and in the rural areas, 5.7% to 8.8%. Large increases in fish imports during this time (six-fold per person) and the relatively lower prices of fish have meant that part of the protein consumption has turned to fish (ReSAKSS, MSU and Syngenta Foundation, 2011).

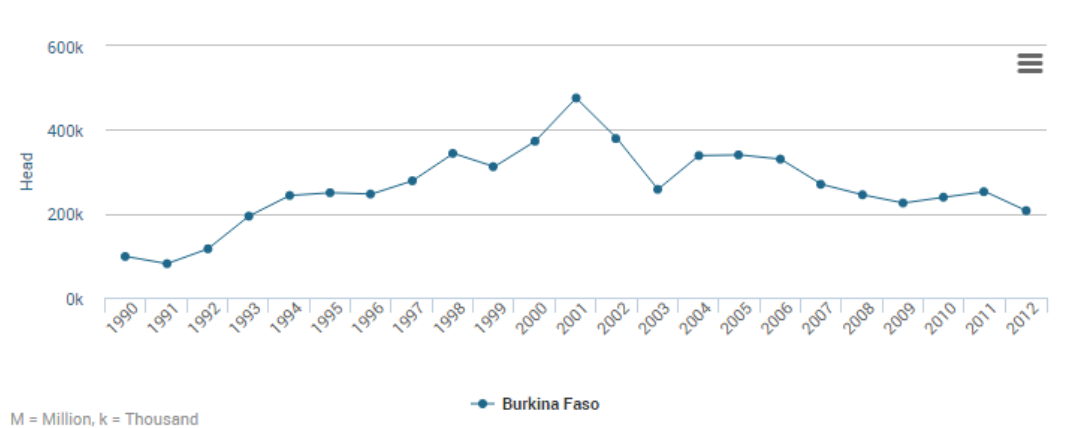
As much of the small ruminant slaughter is not done in the controlled abattoirs, consumption figures for meat are unreliable. For 2011, according to the MRA estimates, consumption was made up of 67% of sheep and goats, 27% cattle, and 7% from pigs (Fadiga and Fall 2014; MRA 2014). Burkinabés mainly consume domestically produced meat. There are some minor quantities of meat imported into Burkina Faso (Fadiga and Fall, 2014). Nigerien traders report that some Nigerien small ruminants are exported to Burkina Faso, including for consumption (not just reproduction) and some Malian animals, present also in Burkinabe markets, get also consumed in Burkina Faso.

Consumers of meat differ greatly, from those buying the cheapest meat in markets to those who shop in supermarkets in Ouagadougou. By far the largest share of the uncooked meat is sold in the traditional markets where price considerations are very important for the majority of the consumers. Grilled meat sold on the streets is another critical end market. Qualities universally sought after include the plumpness and tenderness of the meat. In Ouagadougou markets, small ruminant meat is cheaper than beef, costing approximately 2,500 FCFA/kilogram for lamb and 1,500-2,000 FCFA/kilogram for goat, in contrast to beef which is from 2,250 with bones to 3,000 FCFA without (and for filet cuts, 4,500 CFA).

Burkina Faso typically exports between 200,000 and 400,000 head of sheep and goats per year (Figures 11 and 12). The largest destination countries for Burkinabé small ruminants are Côte d'Ivoire and Senegal. In 2014, 189,503 small ruminants were exported from Burkina Faso to Abidjan's main livestock market alone, according to the data collected by the regional livestock organization *Confédération des Fédérations Nationales de la Filière Bétail Viande des pays Membres de l'UEMOA* (COFENABVI) now being CNFA

published by the West African regional body CILSS.

Figure 11: Small Ruminant Exports by Burkina Faso



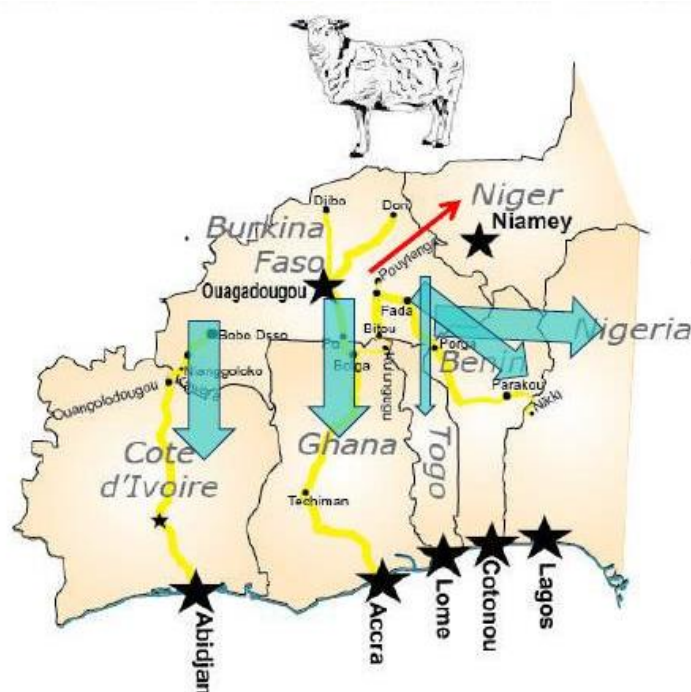
(FAOSTAT, 2012)

While no one really knows, the official data on intraregional trade represent only about one-third of the actual livestock flows from Sahelian to coastal countries. This discrepancy reflects the extent of unrecorded informal trade, the inadequacy of information systems on regional trade, and methodological problems specific to livestock trade (IRAM 2014).

There is a high degree of variability in trade flows reported, due to market peaks caused by religious holidays and end-of-year celebrations. All traders describe large differences in trade volumes. Not all peaks give more business for butchers, given the common practice of home sacrifice. Processors also report down-time after Tabaski, whereas during Ramadan, sales in the evening can be brisk.

High-prices in export markets may present challenges for domestic procurement. For export markets mainly serving Nigeria such as Fada N’Gourma, local domestic consumption seems to be increasingly squeezed between the high demand, with higher prices and the relatively low purchasing power of the inhabitants. As reported by butchers in Fada N’Gourma, butchers purchasing in such markets (and elsewhere) look to source outside of the towns, but are constrained by lack of funds for cash purchase.

Figure 12: Diagram of Burkina Faso's Trade in Sheep and Goats



Source: USAID ATP/E-ATP (2013).

Burkina Faso also is a transit country for some Malian livestock going to Ghana and Togo, particularly through the border crossing at Khoury-Faramana, and for some small ruminants from Niger heading to Côte d'Ivoire or even on to Senegal.

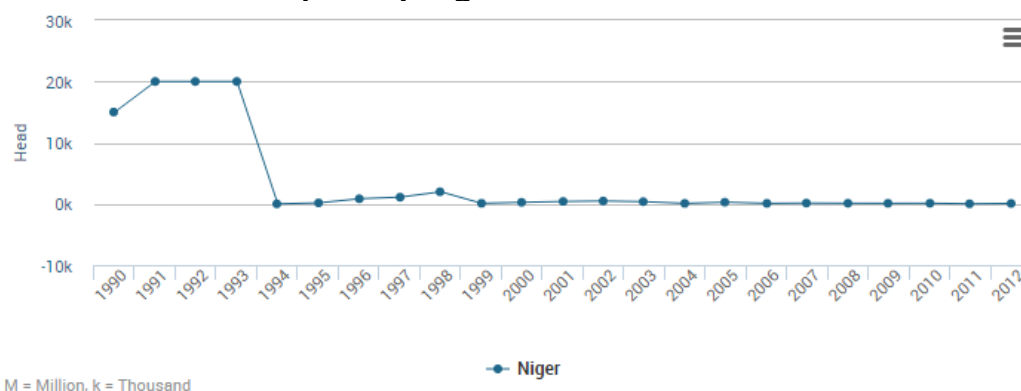
Niger

Niger's domestic market is heavily rural in nature, as 72% of the population lives in rural areas. Remarkably, taken together, Niger's five largest cities (Niamey, Zinder, Maradi, Agadez, and Tahoua) only account for about 12% of the total population of 17.8 million. The remaining towns are small, with only 18% of Niger categorized as urban (World Bank, 2015). Meat consumption was estimated in 2009 at 20 kilograms per person per year, composed of meat from goats (38%), sheep (29%), cattle (28%), and camels (5%) (Fadiga and Fall 2014).

Niger has strong population growth, an increasing urbanization rate, an expanding economy, all of which can be expected to result in increased markets for meat. Niger's population is expected to increase from 17.8 million in 2015 to 34.5 million in 2030 and to 69.4 million in 2050 (UN 2013). Equally importantly, the proportion of the meat marketed outside of the home will increase as Niger's urbanization rate is expected to increase from the current 17% to 35% by 2050.

While per capita meat consumption in rural areas is lower than in urban areas, it is clear that a large percentage of Niger's total domestic consumption of meat takes place in the rural regions where the vast majority of the population lives. Since the great majority of Nigerien rural dwellers are livestock producers, it follows that most of the meat eaten in Niger is at the household level and likely never traded.

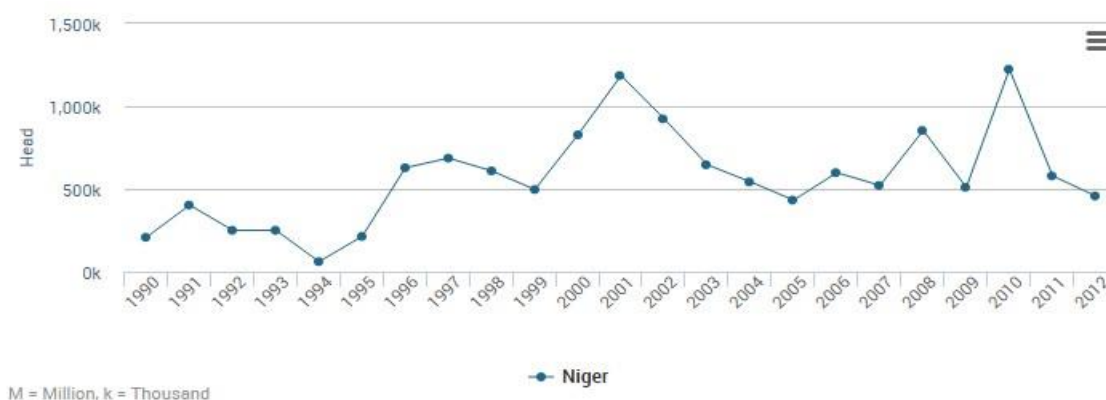
Figure 13: Small Ruminant Imports by Niger



Source: FAOSTAT.

Small ruminant meat consumed in Niger is from within the country's borders as the import levels for small ruminants are almost non-existent (Figure 13). There is small-scale trade with non-ECOWAS neighboring countries such as Chad and Libya which is typically not recorded in the official trade data. Of course, Niger is an important exporter of small ruminants to other countries in the region, oscillating between a half-million and a million head per year (Figure 14).

Figure 14: Small Ruminant Exports by Niger



Source: FAOSTAT.

The meat value chain generates value for a large number of people who work as retailers of fresh meat and preparers of food sold publicly, including as grilled meat, head soup, various other food preparations, and as *kilitchi*, the famous dried meat. Women have important roles at the end of the value chain, as preparers and sellers of various foods.

Small ruminant milk is mainly consumed in the producing households where it is known for its important nutritional benefits, particularly for children. Goat milk in particular is used as a substitute for mother's milk. PAPIA estimated rural goat milk production at 5 kg/person per year, half of rural cow milk consumption rate.

Despite a generous supply of animals in the Nigerien markets, export demand seems to be driving up

prices to a point where they may become too high for local consumers. The major meat consuming cities are also important departure markets for exports. Traders concentrating on sales for consumption in the domestic markets, particularly near the Nigeria border, point to the difficulties of procuring animals in the high- priced markets at low-enough cost to sell them at prices which the Nigerien consumers can afford.

Nigeriens are consumers of small ruminants as mutton and goat meat consumed in religious and family festivities as grilled meat and head soup (soup made by cooking the head of an animal for a long time, with some added ingredients) in the home and also sold in the streets. MSU estimates that about 6.6% of the income spent on food in rural Niger is for meat, compared with 10.2% in urban areas (ReSAKSS, MSU and Syngenta Foundation 2011). Interestingly, the consumption of non-staple foods (including occasional meat) in Niger is not more sensitive to income than staple food consumption, presumably because of the large amount of unmet demand for staple foods in Niger. Future increases in income will certainly result in increased meat consumption, but only after the demand for staples has been met.

In the small town abattoirs, where there is lower purchasing power, there are indications that the quality of animals destined for slaughter is lower, presumably due to animals that are less meaty. A woman selling kebabs in Tillabéri often sources lamb meat from Niamey, noting that it is hard to get tender meat in Tillabéri. Higher-quality meat is typically sold in Niamey, marketed to Nigeria traders who will pay for quality.

Meatiness, or the size of the edible muscle mass, remains an important criterion for butchers. Butchers look for this quality also for their own preparations, such as grilled meat which is commonly sold in the markets and road sides. Tenderness of the meat is an important criterion for selection.

There are observable price differences between Niger and Nigeria, based on different types of meat (Table 3). Beef is commonly either the same price or higher than small ruminant meat in the Sahel, but always more expensive in Nigeria.

Table 3: Prices for Different Meats in Niamey and Lagos, June-July 2015 (in USD)

Place of purchase	Lamb 1	Lamb 2	Goat 1	Goat 2	Beef 1	Beef 2
Market in Niamey	5.10		5.10		4.25	5.10
Supermarket in Niamey	6.80		6.80		6.80	7.14
Market in Lagos	6.00	5.00	7.50	6.00	5.00	
Supermarket in Lagos	9.30	11.50	9.00	10.00		

Source: REGIS-AG staff research. Note: for Niamey, Price 1 and Price 2 are for meat with and without bones; for the market in Lagos, male versus female animals; for the supermarket in Lagos, different cuts.

Grilled sheep and goat meat is typically outside the reach of the poorest consumers in both countries, even if they play a role in helping with the maintenance and movement of the herd. Access to small quantities of unpasteurized milk, however, is one of the benefits of being a herder.

The Regional Enabling Environment for Small Ruminants

The ECOWAS and UEMOA regulations on the free movement of live sheep and goats represent a well-established enabling environment for expansion of trade. As one of the ECOWAP products, live small ruminants and many of the subsidiary products such as hides and skins and leather may circulate freely throughout the 15 countries of ECOWAS without paying Customs duties, other import-related fees, or Value-Added Tax (VAT). Chilled whole carcasses of sheep and goats and rendered small ruminant meat cut into consumer-size portions, most likely to travel between ECOWAS countries if this trade were to ever develop, would travel in refrigerated trucks or vans. Sheep and goat meat, whether chilled or frozen whole carcasses or parts, would be eligible for duty-free treatment in shipment to other ECOWAS countries under the ECOWAS Trade Liberalization Scheme (ETLS).

The ECOWAS and UEMOA rules are nearly identical. There remain slight differences between the ECOWAS and UEMOA regulations in the application of Value Added Tax (VAT) related to the cross-border movement of staple foods (USAID ATP/E-ATP 2010a). The UEMOA VAT rate is 18%, although Niger has a derogation permitting a 19% rate. One nuance is that UEMOA countries may choose to assess VAT (18%) on basic staple foods such as live animals, with Senegal the lone country to do so.

This Senegal VAT policy, which has long been the source of complaints by Mali's national livestock association and the regional body COFENABVI, also affects the competitiveness of small ruminant exports by the 2 REGIS-AG countries. Animals from Niger and Burkina Faso do travel through Mali in order to reach the livestock market in Dakar. Senegal is intentionally practicing *discriminatory application* of VAT, as VAT is collected in imports but not on domestic sales of livestock, representing a disguised tariff barrier to intra-regional trade under the UEMOA and ECOWAS rules.

In order to avoid paying the VAT, small ruminants in particular frequently travel on foot by an overland route rather than cross by truck at the Mali-Senegal border past Kayes (USAID Mali-IICEM 2013). On top of that, since 2007, Mali has had in place a requirement that the governor in each of Mali's regions must approve each shipment of livestock from local livestock markets, a time-consuming and unnecessary non-tariff barrier to intra-regional free trade (USAID ATP/E-ATP 2010a).

The full menu of primary and most relevant secondary legislation for both ECOWAS and UEMOA can be found in Table 4:

Table 4: Regional Legislation for the Free Movement of Small Ruminants in West Africa

ECOWAS

- Revised ECOWAS Treaty (1993), Articles 3.2d, 35 et 36.2
- *Décision A/DEC.6/7/92 relative à la mise en application d'un schéma unique de libéralisation des échanges de la CEDEAO*
- Decision C/DEC.8/11/79 of the Council of Ministers on the liberalization of trade in basic agricultural products (*produits du cru*)
- Convention A/P4/5/82 relating to Inter-State Road transit of goods (introduction of *Carnet TRIE*)
- Single Customs Declaration (SCD) (ECOWAS C/REG.4/8/99)
- 2003 Protocol on the Definition of Originating Products (A/PI/1/03)
- 2009 Directive on the harmonization of VAT, not entirely in application.

UEMOA

- *Traité UEMOA révisé (2003): Articles 4, 77 et 78*
- *Directive TVA révisée (02/2009/CM/UEMOA)*
- *Décision n°7/2001/CM*
- *Décision du 1 juillet 1996 libéralisant le marché commun pour les produits du cru*

Source: Mali-IICEM (2013). NB: UEMOA regulations are only valid in the French language.

ECOWAS also has a mandate to oversee the harmonization of national policies on pastoralism issues, including transhumance, in coordination with CILSS, the West African regional body tasked with leading the way on technical issues related to the environment, food security, water, agriculture, and labor. There is a West African Charter on transhumance now 30 years old, and in 2012 FAO proposed an Action Plan for transhumance in West Africa (FAO 2012). At the national level, many West African countries have enacted a series of measures such as a *code pastoral*, *charte pastorale*, *code rural* and *Loi Agrosylvopastorale* in addition to national texts on the *foncier pastoral*, the national water policy, and the national livestock policy (FAO 2012).¹⁷

For many years, USAID regional and bilateral programs have participated in the initiative to ensure the free circulation of basic staple foods, including poultry, under the ECOWAS Trade Liberalization Scheme (ETLS). A 2008 West Africa Trade Hub Gap Analysis laid out the body of rules and procedures for intra-regional trade in goods. A 2010 ATP/E-ATP report spelled out the relevant ECOWAS and UEMOA legislation related specifically to intra-regional trade in basic staple foods and addressed policy and implementation issues (ATP/E-ATP 2010a). ATP/E-ATP and the IICEM-Mali project produced ECOWAS Trader-Transporter Cards as part of its outreach to involve stakeholders in its advocacy efforts, disseminating roughly ten thousand of these cards in English and French throughout the basic staple food value chains in the countries covered by those projects (Figure 15).¹⁸

¹⁷ The FAO report details briefly the national transhumance policies for Burkina Faso and Niger.

¹⁸ These plasticized cards, suitable for keeping with one's passport, were distributed to value chain stakeholders in Burkina Faso, Niger, and other ECOWAS Countries under the ATP/E-ATP and Mali-IICEM projects from 2011-2013. The main target audiences were national and regional policymakers, particularly the private sector representative associations at the national and regional levels. In 2015, the Market Access Division of CILSS chose to reproduce these cards with the logos of ECOWAS, UEMOA and CILSS all appearing together.

Figure 15: ECOWAS Trader-Transporter Card for Staple Foods



Source: IICEM-Mali project.

These cards refer only to live animals, hides and skins and handicrafts containing leather. Meats are a processed product under the ETLS, which requires that producers register their products and provide information about their production methods, costs, industrial capacity, and health precautions to the National ETLS Approval Committees, which meet once a year or more often as part of the ECOWAS ETLS Approval Committees. If the determination is made that the non-staple food product utilizes sufficient West African content in the value added process, then that product can travel duty-free and quota-free as under the Trader-Transporter Card above. Processed food products such as meats and milk products like yogurt or farmer's cheese do not automatically move freely between the countries of ECOWAS, as the ECOWAS Customs Union has many gaps in its design and implementation. Hides and skins exporters do not have to register in the ETLS, nor do exporters of handicrafts made from animal products such as leather.

Despite the well-established framework within which free trade should occur within West Africa, for small ruminants as for most other products, many barriers to trade still exist, costing traders and transporters substantially in terms of both time and money. These daily headaches provide a great disincentive to engage in intra-regional trade.

The region-wide 2013 Food Across Borders Conference was oriented around finding solutions to 5 main issues hampering intra-regional trade in basic staple foods such as small ruminants. The

following topics were the subject of working groups which devised solutions for national and regional stakeholders to take:

- 1) Road harassment
- 2) Non-equivalence of SPS certificate
- 3) Continued requirement for Certificate of Origin
- 4) Problematic implementation of VAT
- 5) Export restrictions.

The 2010 ATP/E-ATP report identified product-specific trade barriers facing intra-regional trade in ruminant animals and meats poultry specifically (E-ATP), as in Table 6.

Table 6: Summary Table of Policy Barriers to Intra-Regional Trade in Livestock

ATP Value Chain	Identified Policy Barriers to Trade in West Africa
Ruminant Livestock-Meats	<ul style="list-style-type: none"> ▪ Regional governor's export authorization requirement in Mali ▪ VAT and other fees charged on livestock imports by Senegal ▪ Basket of fees for transit operations ▪ Burkina Faso's FODEL export tax ▪ Non-respect of equivalence of veterinary certificate across borders ▪ Difficulties in exporting to Cote d'Ivoire ▪ "Parking tax" imposed by local authorities in Bitou, Burkina Faso

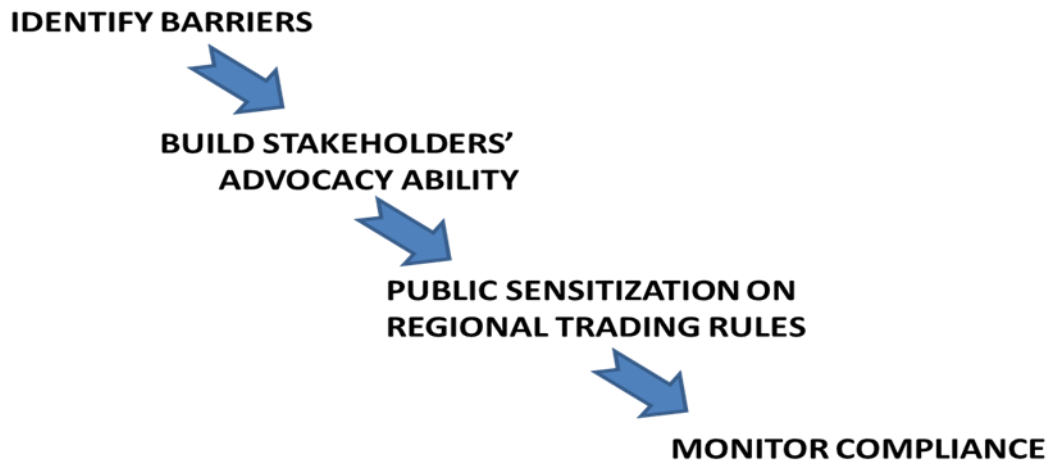
Source: USAID ATP/E-ATP (2010a).

In addition, a number of non-product specific fiscal, physical and technical barriers to increasing intra-ECOWAS trade were also identified, many if not all of them also applicable to poultry:

- Corruption on the roadways
- Extra charge by Customs officials for "overtime"
- Difficulties in transferring funds across borders
- Burkina Faso's "computerization tax" (1%)
- Ghana's "processing fee" (0.25%)
- "Parking tax" imposed by local authorities in Bitou, Burkina Faso.

There is a West African regional livestock value chain representative association, the *Confédération des Fédérations Nationales des Filières Bétail Viande des Pays Membres de l'UEMOA* (COFENABVI), which has a powerful voice in both Burkina Faso and Niger. Under the ATP/E-ATP project, livestock value chain operators received training and coaching in how to approach the dismantling of trade barriers such as those mentioned above (Figure 16).

Figure 16: Approach to Dismantling Trade Barriers in West Africa



Source: ATP/E-ATP (2010a).

For roughly the past 15 years USAID/WA has supported the collection and dissemination of two main streams of data related to the movement of live animals within the ECOWAS-UEMOA Customs Union. As a result, a number of sources of information from the 3 successive West Africa Trade Hubs, the staple foods-oriented ATP/E-ATP, and activities with the regional agriculture-environment-food security body CILSS have brought to light ample concrete evidence of unfair policies and practices on the roadways hampering the efficiency of intra-regional trade.

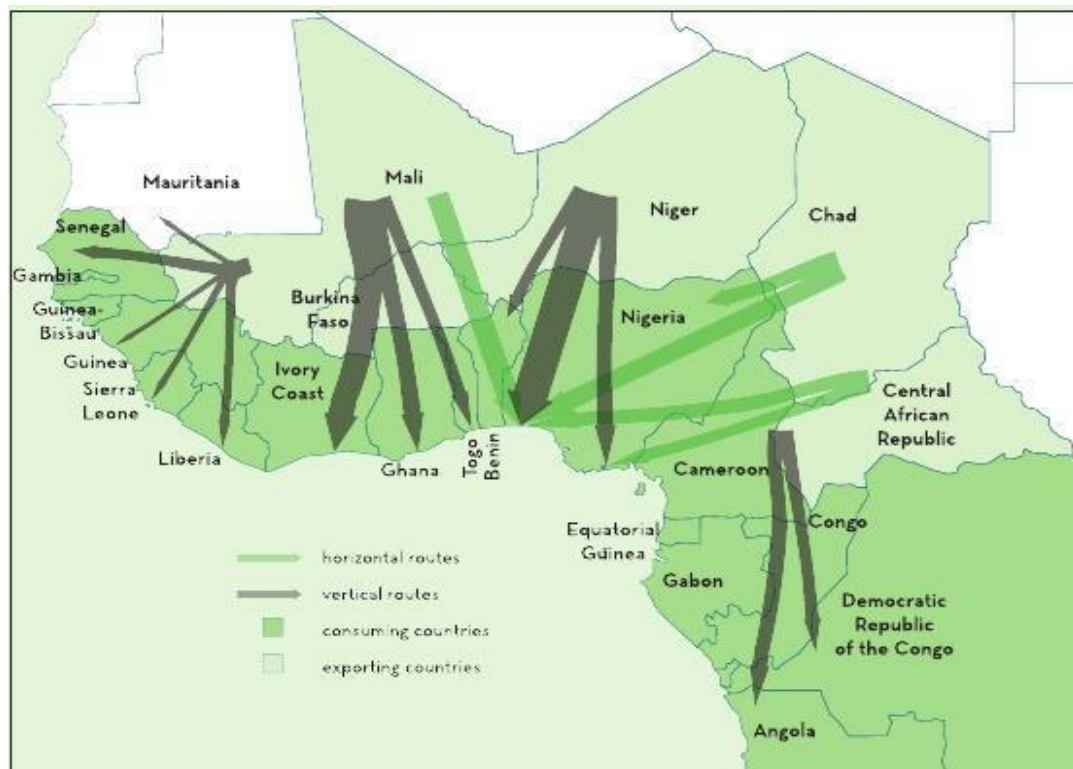
The series of data on road governance—added costs in terms of time and money due to delays and the need to pay bribes to uniformed officials at road checkpoints along key corridors for intra-regional staples food trade—was for many years made available to the public quarterly using data collected by the West Africa Trade Hub under the aegis of UEMOA's *Observatoire de Pratiques Anormales* (OPA). That function is now the responsibility of CILSS working in combination with UEMOA.¹⁹ The series of data on shipments from key markets of livestock and cereals, formerly collected and published by USAID ATP/E-ATP, is also now the responsibility of CILSS, and those reports are readily available to the public.

Complementing the trade-related legislation is a regional West African convention on the free movement of live animals across borders as part of the transhumance cycle. The regional livestock association COFENABVI has proposed a regional convention on pastoralism, although that initiative has not advanced very far.

Regional Market Opportunities within the UEMOA/ECOWAS Region

Sahelian livestock producing countries have a regional comparative advantage in supplying live animals to coastal populations with limited livestock but large and growing urban markets. Given the free trading rules under UEMOA and ECOWAS, the traditional markets in Côte d'Ivoire, Ghana and Nigeria are all well-established but capable of expanding.

¹⁹ There have been coordination difficulties between CILSS and UEMOA such that the road governance data, which is still being collected, has not been made available to the public in more than a year.



Côte d'Ivoire

Côte d'Ivoire is a major market for goats and sheep from Sahel countries as domestic production does not meet its demand for meat. The domestic livestock sector in the past was supported by government programs, particularly in the northern regions. Over time, donor support dried up and then political problems disrupted the economy of the northern region where livestock flourished close to the best Ivorian cereals-producing areas. With weak domestic production, goats and sheep from Niger and Burkina Faso are a premium product in the livestock market in Abidjan where they are sold at high prices.²⁰

One study last year noted that Burkina Faso provides 40% of the small ruminant imports by Côte d'Ivoire (World Bank 2015). Table 7 contains data from the West Africa Trade Hub Network on Côte d'Ivoire's imports from Burkina Faso and Niger between 2004 and 2011, with some variability but showing a well-established trading pattern in place. The official trade data from FAO in Figure 17, which do not necessarily jibe with the data in the Trade Hub Network report, show a substantial drop in small ruminant imports from the peaks in the mid-1990s following the devaluation of the FCFA but before the Ivorian civil war.

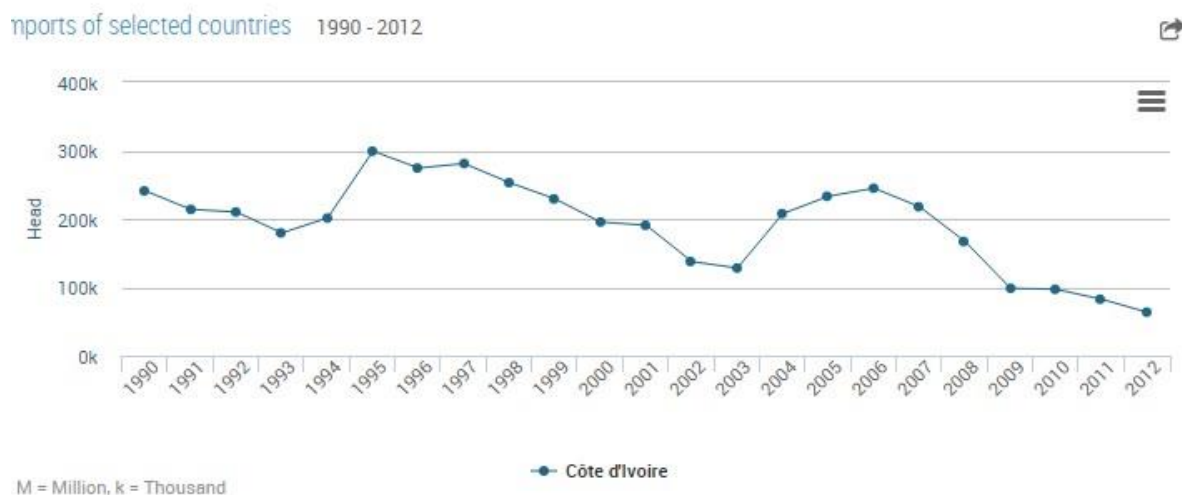
²⁰ The Trade Hub Network report (2015) suggests that one factor affecting the Ivorian market for live animals is the “increasing pull” of the Nigerian market for high-quality, meaty animals given animal feed, which puts upward pressure on regional prices.

Table 7: Small Ruminant Imports by Côte d'Ivoire from Burkina Faso and Niger (Number of Head)

	2004	2005	2006	2007	2008	2009	2010	2011
Burkina Faso	178,499	204,424	216,684	184,494	210,341	221,174	275,107	118,054
Niger	2,583	4,667	1,993		2,800			

Source: West Africa Trade Hub and Network Partners (2015), citing Kouable Bi 2014.

Figure 17: Sheep and Goat Imports by Côte d'Ivoire



Source: FAOSTAT.

Statistics for 2014 show the number of small ruminants imported from Mali and Burkina Faso, with Mali supplying slightly over 50% of the total (Table 8). The 2014 data were collected by market enumerators for COFENABVI, the regional livestock body based in Abidjan, which has worked closely with USAID-funded regional programs. Through the affiliated Regional Livestock Observatory of West and Central Africa (ORBV/AOC) based in Bamako, COFENABVI maintains a market information system on regional trade that is now being published by the regional agricultural body CILSS. While the statistics do not include Niger, importers in the livestock market in Port Bouet explain that Nigerien animals shipped to the Abidjan market arrive registered as imported from Burkina.

Table 8: Small Ruminant Imports by Côte d'Ivoire in 2014

From	No. head	Value (FCFA)	Value (\$US)
Burkina	189,503	11,469,710,000	22,939,420
Mali	220,834	14,390,880,000	28,781,760
Total	410,337	25,860,590,00	51,721,180

Source: COFENABVI.

Abidjan is the main market for Sahelian small ruminants which are transported mostly by truck by traders from Burkina, Mali, and Niger. The main end market is Port Bouet in Abidjan, located in a very crowded area in the city where livestock importers buy and sell animals to a range of customers, from individuals to wholesale buyers. Pricing is not fixed and each animal purchased is a negotiation between buyer and seller, with goats and sheep ranging from 30,000 to 300,000 CFA francs. Costs are driven by CNFA

high transport costs to Abidjan in trucks that are retro-fitted to carry animals.

The Port Bouet abattoir is getting an upgrade that was scheduled to be completed by September 2015. While the receiving area for small ruminants has undergone some improvements, only one-half of the work was completed when work was halted.

Market requirements at wholesale for live animals are informal and without any grades or standards. Buyers and sellers negotiate the price for each animal individually, visually inspecting the health and quality of the animal. Sahelian sheep and goats are preferred with Nigerien animals considered the best quality, color and breed. Large white sheep from Niger bring a premium while Ivorian small ruminants are considered less desirable but are an important source of food throughout the country with most sales local. Goat and sheep meat are considered “safe meats” by consumers who are in the process of replacing game (bushmeat) in their diets due to fears of Ebola. Supermarkets have higher standards for inspection of meat, and lamb meat that is posted as local and is sold alongside imported lamb from Europe at half the price.²¹

Population growth in Abidjan, now with a population over 6 million, is driving the demand for small ruminants in Côte d'Ivoire. The demand for sheep for the Tabaski holiday alone in Abidjan exceeded 100,000 head in 2014 and in 2015 Port Bouet organized a special fifteen-day live sheep market for both resellers and individual consumers prior to Tabaski. Burkina Faso and Niger can do more to promote pre-Tabaski sales by coordinating with the Port Bouet market and participating more directly in the market fair.

For supplying supermarkets that try to maintain high quality standards, there is one company in particular, PROSUMA (the *Société Ivoirienne de Promotion de Supermarchés*), that specializes in high-quality meat from the Sahel and also imports from Europe and other non-African sources. An important domestic stakeholder for livestock marketing is the Ivorian Ministère des Ressources Animales et Halieutiques responsible for ensuring that livestock markets function properly in order to meet the demand of local households.

PROSUMA officials expressed interest to REGIS-AG in purchasing goats and sheep (post-slaughter) from Niger, shipped by refrigerated truck from Niamey to Ouagadougou, and then by refrigerated railcars from Ouagadougou to Abidjan. Supermarkets sell Sahelian meat as “local” versus “imported” which indicates meat Europe or a non-West African source. PROSUMA has proposed a target of purchasing 300 small ruminant animals per week from Niger and have discussed a similar arrangement with the Trade Hub Network for cattle. A feasibility study is required to further develop this proposal.

One other potential opportunity is to put into place a partnership with the firm UCOVISA for installing a fattening farm in Korhogo for small ruminants from Burkina and Niger. This would target the increasing demand for goats and sheep in Côte d'Ivoire and be a source of animals for the new abattoir planned for Ferkessédougou in northern Côte d'Ivoire. Livestock fattening in the north, where the climate is more conducive than in Bouaké or Abidjan, is an opportunity that merits further consideration.

In addition to the trade in live animals for slaughter, it may well be worth exploring how to assist Nigerien

²¹ The term “local” may refer to Ivorian meats or those coming from Sahelian animals.

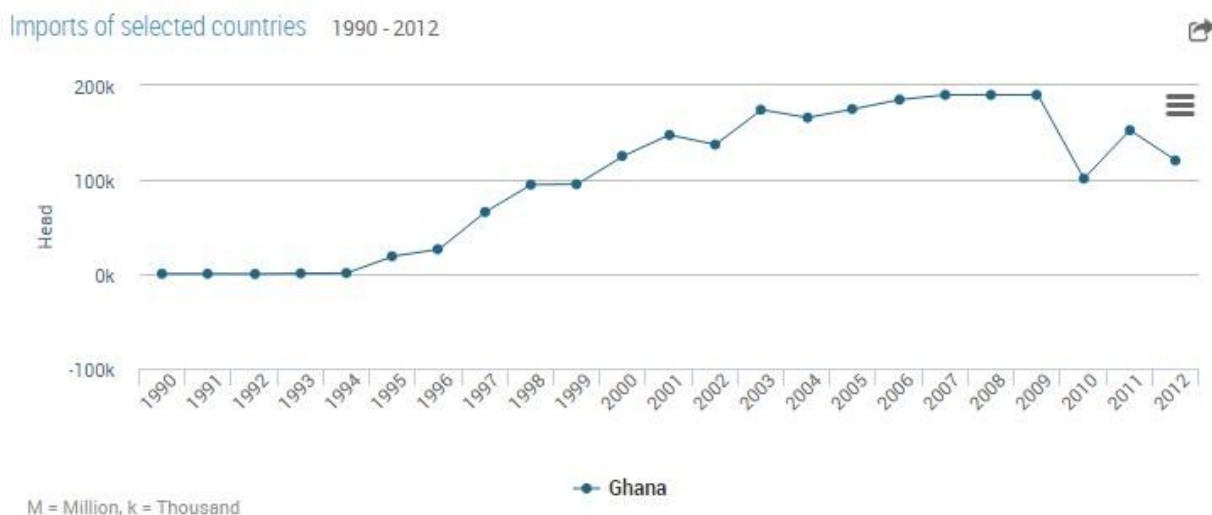
exporters to ship breeding animals to Côte d'Ivoire for reproduction. This is particularly true for animals from Niger, where there are many breeds that are well known throughout the region. Currently in Maradi there is one trader who exports animals to Côte d'Ivoire, tagging animals to ensure traceability.

Ghana

For Ghana, the largest demand centers are concentrated in the Accra-Tema metropolitan area and the cities of Kumasi, Takoradi, Cape Coast and Tamale. All import and export trade is in live animals and occurs in organized livestock markets, with no reports of direct contracts between exporters and importers. Major transit markets for imports include Ashaiman, Kumasi, Techiman and Tamale. Burkinabé traders come to these markets and sell animals through the “hosts” (i.e. intermediaries). Alternatively, Ghanaian traders go and fetch animals from Burkina Faso.

Actual trade flows are uncertain, with strong seasonal variability, but Figure 18 suggests Ghana imports between 100,000 and 200,000 head of small ruminants per year. All traders interviewed by REGIS-AG reported greatly higher volumes at Christmas-New Year and during Muslim holidays. Data collected by the ATP Project also shows clear seasonal patterns in the volume of ruminant trade. As is the case for all staple commodities traded in West Africa, official trade figures are likely greatly underestimating import volumes from Burkina Faso and Niger to Ghana.

Figure 18: Imports of Sheep and Goats by Ghana



Source: FAOSTAT.

Supply is variable over the course of the year, but those interviewed consider supply to be in general sufficient. No trader reported problems with supply. During the busy end-of-year period, frequent trips are made by the Ghanaian traders to Burkina Faso to source animals, often necessitating leaving the actual sale of animals in their home market to a “brother” or proxy trader. Higher prices at busy times of year motivate traders to supply.

The imports are mainly Burkinabé sheep and goats, with relatively well-understood and well-established CNFA

linkages between Ghanaian and Burkinabé markets. Most goats and sheep in the markets visited are Burkinabé and Ghanaian. Traders reported some Nigerien and Malian goats that had been purchased in the Burkinabé markets and brought to Ghana. Interestingly, small ruminant trade seems to mainly take place between “sister markets” of exports and imports. Kumasi traders report going to Djibo in the Sahel region of Burkina Faso to purchase animals whereas Techiman traders are mainly purchasing from Leon. Although a number of traders reported trades with other locations, those connections are less common. Familiarity with a certain market seems to weigh greatly as a criterion for market selection.

Meat processed through traditional slaughtering and meat cutting practices is the main way that small ruminants are sold throughout Ghana. By far, the largest market segment is meat butchered with unimproved tools, washed and lightly burned over fire and thereafter cut into pieces with little differentiation between the various cuts. Despite the existence of abattoirs in the major towns, a large part of slaughter continues to take place on slabs. Therefore, much of the processing is unsanitary, with poor regulatory oversight. However, because the traditional slaughtering process is cheap, these practices endure as lower prices are favored amongst consumers. Many supermarkets also purchase the meat from animals slaughtered by traditional methods.

In terms of demand characteristics, Ghanaian traditional markets appreciate the taste and the scent (or lack of smell) of the native Ghanaian goats, which are smaller in size, and are ready to pay a higher price for kilogram for them. Therefore, the chop bars and individuals preferring traditional Ghanaian flavors typically purchase only the Ghanaian goats, despite their higher per kilogram price. Due to the much smaller size of Ghanaian goats, the price per animal as a whole is less even if the per kilogram price is higher. A Ghanaian trader estimated that per kilogram prices for Ghanaian goats are 20% more than non-local breeds.

But at least one segment of the population, Ghanaian high-end consumers, appreciate Burkinabé small ruminants and tend to purchase them exclusively, due to their larger size and meatiness. Further, there are clear signs for increasing demand among higher-income consumers for higher-quality meat in cuts produced in more-hygienic environments. The Marina Mall supermarket of Accra has been very successful in sales of meat slaughtered at the Accra Abattoir, which is then hung and sold in diverse cuts although prices are clearly higher than at other supermarkets which continue to procure by the slab, as in traditional markets. To serve these “non-traditional” consumers, supermarkets such as Marina Mall that serve middle- and upper-income Ghanaians and expatriates only buy Burkinabé goats and sheep.

Import and export trade and retail sales of meat are dominated by men in Ghana. Almost the entire chain up to the cooking of the meat is handled by men, from traders, intermediaries, butchers, various others associated with the butchering operation, and retailers. It is also men who handle cooking and selling grilled meat on the streets. Men also are the ones who work the skins and hides and often make them into finished products and sell them. For a large share of the Ghanaian market, that part devoted to traditional consumption, the goat fur is removed but not the skin, as the meat is served with the skin on. Women commonly cook the meat in chop bars and restaurants (and of course in homes) and can sell skins/hides in retail stalls or as leather products.

Relatively fixed pairs of markets offer opportunities for more direct trade. Given the habit of Ghanaian traders to always procure from the same markets, there is a possibility to explore direct contacts between

these traders and producer groups. This is particularly the case between Kumasi and Djibo, located in the Sahel region and in the project area. With producers agreeing to work towards common selling dates and establishing contacts with traders interested in their animals, the sale can be direct and thereby eliminate additional costs coming from the market.

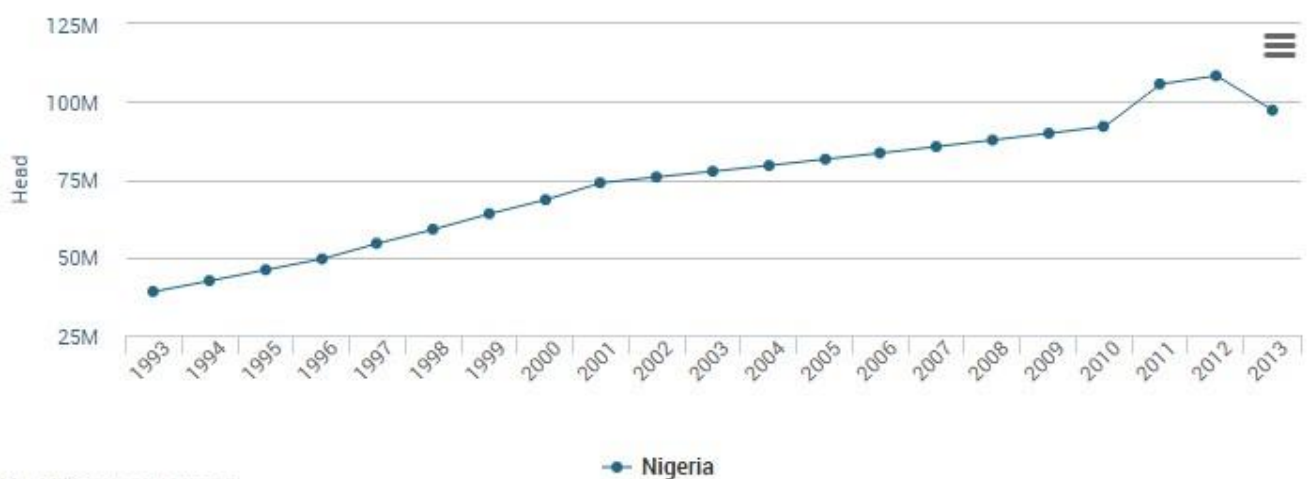
A relative newcomer based in the Accra suburb of Medina, Johnny's Foods, banks on a business model that includes safe slaughtering and cutting practices and has successfully attracted some of the higher-end hotels and caterers as its clients. With clear quality criteria and contracts, producer groups could sell directly from the REGIS-AG project zones in Burkina Faso to Johnny's Foods.

Nigeria

The importance of Nigeria to Niger's small ruminant sector cannot be underestimated. While many of the market mechanisms arise from traditional practices, the degree of market integration between Niger and Nigeria is very advanced. Nigeria dominates as a destination country for Niger livestock, with official export figures showing an estimated 95% going to Nigeria.

Nigeria, with the largest economy and largest population in West Africa, is also the largest producer of small ruminants in West Africa, having almost 94 million head in 2010 (46% of West Africa's total small ruminant population). Nigeria relies greatly on live animal imports from its northern neighbors, Niger, Burkina Faso, Chad, and Mali, for its supply of small ruminant meat. To study Nigeria's end market, REGIS-AG made a mission to the largest markets located in the southern part of the country, and supplemented that with knowledge about northern Nigeria from workshops held in 3 cities of Niger at which male and female stakeholders from northern Nigeria also participated.

Figure 19: Small Ruminant Production in Nigeria

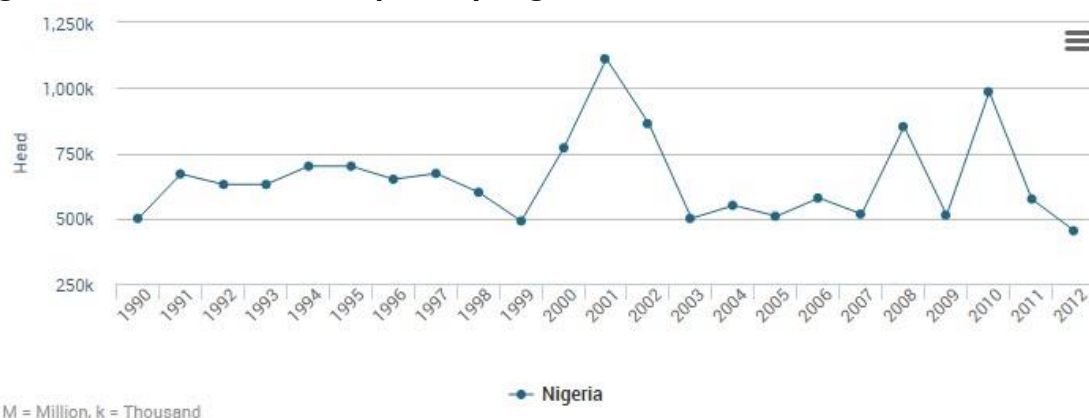


Source: FAOSTAT.

Over the past 20+ years, small ruminant production has been increasing in Nigeria, as in Figure 19, but so has demand, with a growing population. Nigeria has almost doubled its domestic production, but this has not slowed imports, as Nigeria continues to consistently import between 500,000 and 750,000 head of small ruminants per year. With nearly zero exports of small ruminants, this shows that Nigeria's domestic demand for live animals from elsewhere in the

region remains strong despite increases in productivity.

Figure 20: Small Ruminant Imports by Nigeria



Source: FAOSTAT.

Once again, different data sources provides somewhat different figures for trade. Table 9 below shows Niger's official export volumes for small ruminant exports to Nigeria from 2009 to 2013. The reduction of exports in the final two years is likely related to security problems and the depreciation and fluctuation in the value of the Nigerian currency, the Naira.

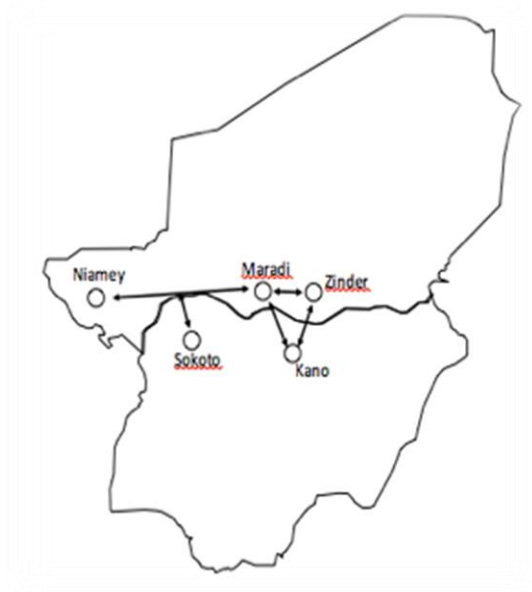
Table 9: Niger's Small Ruminant Exports to Nigeria

Year	2009	2010	2011	2012	2013
Sheep	199,343	796,176	264,561	114,751	68,751
Goats	342,886	380,189	333,297	295,196	131,069
Total	542,229	1,176,365	597,858	409,947	199,820

Source: MRA (2014). *Annuaire de statistiques de l'élevage du Niger 2009-2013*.

There are many thriving small ruminant markets throughout Nigeria. The transit markets near the borders include Dan Batta, Djibiya (in Katsina), Illéla (Sokoto), Kamba (Birni Kebbi), and Damasak (Maiduguri). The great majority of the small ruminants traded in them come from Niger (70-80%). Major import markets aggregating small ruminants are numerous and include Kano, Sokoto, Kebbi, Niger, Katsina, and Zamfara (Figure 21). In the markets visited in southern Nigeria, Nigerien animals dominated among the imported goats and sheep, but the team were also shown animals from Burkina Faso and Mali, and told that there are animals coming from Chad.

Figure 21: Major Crossing Points between Niger and Nigeria



Source: DFID 2015.

Between Niger and Nigeria, there are relatively set links between certain export and import markets. Although not as fixed in some of the major import markets of Ghana, traders from Lagos and Ibadan seem to prefer certain markets up north. For example, those from Ibadan's Oranyan market commonly go to Kano (previously also to the Northeast, but no longer due to the security situation) and at times to markets in Sokoto and Katsina. Traders from the south go and buy from the markets in the North or northern or Sahelian traders bring animals down to the south. Table 10 contains an estimate of the costs in FCFA for bringing small ruminants from Niger to a final market in Nigeria (e.g., Kano) from a trader in Baboura, Niger.

Table 10: Breakdown of Costs for Exporting Small Ruminants from Niger to Nigeria

	Purchase price	Transport cost	Taxes	Other costs	Total cost	Sales price	Margin
Sheep	100,000	5,000	3,000	2,000	120,000	130,000	10,000
Goats	50,000	4,000	2,500	1,500	58,000	70,000	12,000

Source: WATHN (2015). Estimates by a trader in the city of Baboura in Niger. Costs are per animal in FCFA and are assumed to include the cost of bribes and unfair fees.

Some traders interviewed seemed unaware of the large trade flows and considered animals bought in Nigeria to be of national origin, which can perhaps be partly explained by the spread on both sides of the border of certain breeds, such as the red goat of Maradi or Sukoto red. As all over West Africa, seasonal impacts are strong, with far larger trading volumes reported for the Muslim festivals and the Christmas-New Year period. Butchers reported low volumes during Tabaski, and higher volumes only during end-of-year festivities, more important for Nigeria's Christian populations, who do not practice the ritual slaughter at their homes.

Market infrastructure is overstretched and clearly requires investments to handle future increases in trade. The largest small ruminant market serving Lagos (Alaba) is crowded on all sides by houses and during rainy season (as during the market visit) is covered in mud due to lack of drainage. Another large market serving

Lagos, Uluwamsola market in Iseri, Ogun State, also has poor infrastructure and although not right next to human habitation, lacks suitable organization. It is difficult to see how most of these markets cope during the festival times when trade volumes are high. With the population of Lagos expected to grow by an average of 3.9% annually between 2010 and 2030 and become the ninth largest city in the world with 24 million inhabitants, according to UN projections, it is clear that infrastructure in these livestock markets will continue to become increasingly overstretched, needing improvements quickly.

Abattoir infrastructure for small ruminant slaughtering is typically unsanitary. Small ruminants are slaughtered both in abattoirs and on slabs. Although the main abattoir in Lagos has relatively good infrastructure for cattle slaughter, the small ruminants are slaughtered on a slab there. From this Lagos abattoir, meat transport is regulated to take place in refrigerated trucks which number 100 in the main Lagos large ruminant market. In most of Nigeria, meat transport is informal.

Traders and butchers are organized in associations, but not always tightly monitored or formally managed. During REGIS-AG interviews in the Lagos market, no trade market association representative could name for certain the number of traders on the market, and the most common answer was “a lot.” Butchers typically had clearer answers—there are typically fewer of them.

Transactions are mainly in cash, withdrawn from the bank near the point of transaction. All traders questioned reported that they no longer travel with cash in Nigeria due to security risks. Instead, they deposit money in their account in the South and withdraw it when they are in the North.

While cash sales predominate, from the livestock trader on downwards, credit transactions are common. Credit is given to those who are trusted, showing the importance of individual business relations. Traders in the Akynyele market in Ibadan reported that whereas the butchers buying from them cannot be trusted with credit, they have many retail buyers of live animals who can.

Widely held norms within West Africa about appropriate gender roles in livestock trade and marketing are not always applied in southwestern Nigeria. Across the West Africa region, livestock trading, butchering, initial processing (burning fur off the hide) and traditional meat cutting and sales are considered men’s domain. Although some women livestock traders have been reported (in Djibo, Niamey, and Maradi), they are few. In contrast, in Ibadan’s Oranyan market, an estimated 40% of traders are women out of the total number of traders estimated at 500. These women travel regularly to the North, usually together and mainly to Kano, to purchase animals. Women livestock traders from other parts of the Southwest, and perhaps particularly from Abeokuta, where women traders are said to outnumber men, frequent the Ibadan markets.

Similarly, in Ibadan’s abattoir, about one third of small ruminant butchers (15 in total) are women. Women in these professions reported good incomes and no problems in the practice of their trades, either by their husbands or societies at large. Women butchers reported less interest among younger women, given the hard work butchering is. Butchers in the main Lagos abattoir, which only had male butchers during the visit, told that they had had many women apprentices but when it became the time to practice their trade, they preferred going to Ibadan. All women encountered and reported were traders and butchers for small ruminants.

With 160 million people, Nigeria has vast urban markets where consumer demand for small ruminants is very strong, burgeoned by relatively high purchasing power and 47% urban population. In particular, southern Nigeria has a dense concentration of small and mid-sized towns, relying on food production elsewhere in Nigeria or outside, opening the door for trade.

As in Ghana, most of the meat processed and consumed in Nigeria undergoes traditional slaughtering and meat cutting practices. Meat is butchered in slaughterhouses on cardboard or on wood or stone slabs using unimproved but sharp tools, then washed and lightly burned over a fire and thereafter cut into pieces with little differentiation between the various cuts. Mainly due to lack of resources, lack of knowledge and lack of help, the local workers continue to process the meat in these unsanitary conditions as there is poor regulatory oversight. Given the emphasis on price by the majority of purchasers in the marketplace, these practices continue. Many formal sector supermarkets in Nigeria purchase the meat from animals slaughtered in less-than-optimal conditions.

In supermarkets meeting expatriates' standards for modern hygiene and presentation, supermarket prices are far higher than market prices, a minimum of 50% premium for lamb and 20% for goat. Shoprite is able to charge more than 50% above market prices, 1,800-2,200 Naira for specific lamb and goat cuts versus 1,200 Naira in less-formal markets.

Small ruminants are crucial components of the Nigerian culture and cuisine. Goats are used for traditional Nigerian stews, served with one of the numerous Nigerian carbohydrate-rich staples, such as *eba* from cassava-based *gari*, *semovita* from wheat, *amala* from yam, and pounded yam. Rams are important for the Nigerian Muslim and Christian populations alike not only for festivals but also marriage and naming ceremonies.

In terms of consumer characteristics, in general Nigerians have a strong preference for large animals, thus large animals that are well-fattened are in demand. Different studies have ranked different types of animal meat as the most popular among Nigerian consumers, whether goat, beef or chicken (Ladele *et al* 1996; Anzaku *et al* 2013). This shows a variety of strong opinions about individual tastes and preferences. There is clearly a strong impact of cultural, religious and culinary factors on the choice of meat. For many ceremonies, it is necessary to have a whole animal for the ritual. For Tabaski or Eid al-Adha, and to a lesser extent for the end of Ramadan or Eid-al-Fitr, rams are sacrificed, typically at home in the backyard. As half the population in Nigeria is Muslim, this constitutes a significant demand trend. Similarly, during Christmas, prices for rams may triple as families buy rams for Christmas festivities.

In Nigeria, there is a preference for the meat of male goats and larger animals. Traders interviewed all confirmed preference on the part of consumers for the meat of male goats, considered softer. The price differential for meat of male goats was about 20% in the markets compared with female goat meat. Nigerians prefer larger animals for consumption with an exception being the Nigerian goats, which are small, for traditional cultural foods.

Customers at roadside canteens and Ibo customers are known to have a particular liking for the native goat. High-end fast food joints specializing in Nigerian foods also offer goat meat prepared in traditional tastes.

The Nigerian markets have a preference for certain breeds. For sheep, the order of preference is Balami, Bali-bali, and Ouddah. For goats, it is *chèvre rousse de Maradi*, and then *chèvre du Sahel*. Quality requirements include color of the small ruminants. For small ruminants destined for family events, white-color animals are preferred, while *chèvre rousse* has supple skin.

Beef is cheaper and therefore first choice for those Nigerian consumers whose principal criterion is price. Beef, whether boneless or with bone, is cheaper than small ruminant meat on a per-kilo basis. Many consumers in low-income groups therefore principally buy beef. Cattle value chain processors also operate grilling operations, providing greater vertical integration than in the small ruminants value chain.

There is further room for getting higher prices for Nigerien animals in Nigeria by specializing in size and meatiness. Nigerien small ruminants in the Nigerian market are commonly considered cheaper than local animals, as they are “thinner,” suggesting greater feeding would lead to better prices. A Nigerian trader estimated the average price difference at about 1,000 Naira per animal. Nigerien traders can obtain higher prices in Nigerian markets by focusing on the portion of the consumers looking for the highest prices. To produce for that market, the focus should be on working with high-potential animals and developing fattening rations and durations that are cost-effective. For Nigerien sheep, this would mean production of Balami and Oudah breeds for export.

REGIS-AG held workshops in 3 cities in Niger in mid-2015 to which stakeholders from northern Nigeria were also invited in order to explore the market potential for exporting small ruminants from the REGIS-AG countries. The working groups came up with the following strengths and weaknesses of northern Nigeria as a potential market.

1) *Strengths*

- Important markets close by
- Close business, social and cultural connections
- Belonging to a common economic space (ECOWAS)
- Ease of transactions (Customs-transport)
- Permanent markets that will always be there
- Possibility for cash sales

2) *Weaknesses*

- Thefts and insecurity
- Instability of the Nigerian Naira vis-à-vis the FCFA
- Lack of direct access to end purchasers
- Competition from other suppliers (Nigeria-Chad-Mali-Benin)
- Lack of specially-rigged trucks for animals
- High cost of fees crossing borders
- Lack of auction market for live animals

3) *Main players in the end markets in northern Nigeria*

- Buyers/traders
- Processors

- Intermediaries
 - Market officials (Tchiama)
 - Convoy operators
 - Collectors of taxes and fees
 - Butchers
 - “Les FDS” (**any idea who these are?** The sanitary officials?)
- 4) Principal elements for creating a suitable environment for good market penetration in northern Nigeria
- Creation of a cross-border livestock market
 - Better organization of the value chain actors
 - Adopting a law on the interprofession
 - Facilitating better access to credit
- 5) Main actions to improve trading relations
- Creating fairs and exchange trips in an agreed framework between the traders of Nigeria and Niger
 - Creating a steering committee

Other Markets

Benin, which borders both REGIS-AG countries, and Togo, which borders Burkina Faso, are also important markets, less because of their population size but rather due to proximity. Benin is an important importer of live animals from Burkina Faso and Niger, totaling about one-third of a million head per year, with about 80% being re-exported to Nigeria (Wageningen 2014). Togo is a lesser importer, but relies on small ruminant trade with Burkina Faso and northern Ghana to supply its northern regions, as these are better-connected from there than from supply routes coming north from the coastal capital Lomé.

Senegal, another ECOWAS member, imports substantial numbers of small ruminants from Burkina Faso and Niger, whether on foot, in donkey carts or in trucks. These animals must transit Mali, and typically move from one livestock market to another in Mali on their way to Senegal, for example Segou to Kati near Bamako and then to Kayes. As a result, they are mixed in with local herds and usually identified in statistics as Malian animals, although the markings on each animal can typically help an experienced trader or veterinarian to identify the national origin. As mentioned above in the section on the regional enabling environment, Senegal assesses VAT on live animal imports from other ECOWAS countries, representing *discriminatory application* since no VAT is collected on live animal sales in the organized markets throughout Senegal (USAID ATP/E-ATP 2010a).

Guinea is another end destination for small ruminants from Burkina Faso and Niger, similarly arriving through Mali and counted in Malian export statistics.

4. Possible Areas of Intervention by REGIS-AG

Proposed efforts to improve the small ruminant value chains in Burkina Faso and Niger include:

Production

- Form producers into economic groups and support their access to credit;
- Connect them with input traders and auxiliaries through group contracts to reduce prices.
- Explore willingness of innovative traders for credit for feeds and connect through contracts, starting small and using social links to enforce no side-sales policies
- Collaborate with RISE partners and WFP on pasture restoration including managed grazing practices

Input Supply

- Support efforts of producer organizations to attract private veterinarians, starting with regions with fewest providers;
- Training courses for auxiliaries, and development of auxiliary networks and peer support, as well as business training for auxiliaries;
- Support enterprises interested in initiating feed production in the existing mills in Niger through assistance with business plan development;
- Support fodder entrepreneurship in diverse ways, including feed banks for fattening purposes, cooperation with ICRISAT and INRAN to promote varieties with improved fodder quality, and encouraging foraging in farmers' fields post-harvest;
- Business and technical training for women and women groups for selling enriched feeds from cereal residues.
- Sensitization to improve animal health through increased access to water

Marketing

- Develop market co-management that involves all value chain actor groups, including producers, and a broad representation of groups in the value chain;
- Support through trainings, development of procedures, and study visits;
- Support and develop producer economic interest groups (see previous section);
- Support development of vertical linkages between selected traders and producer groups. Assist with contracts and training;
- Conduct a study on the current size and future potential of the three segments. Discuss with value chain actors, government, and the other stakeholders. Develop a strategy on the basis of potential;
- Fairs for small ruminants;
- Synchronized fattening combined with producer-trader contracts.

Processing

- Technical training courses for butchers and their apprentices;
- Link with infrastructure improvements in Maradi and Zinder in Niger in 2016, and support training efforts to take advantage of improved processing;
- Butcher revolving funds for improved credit management and flexibility;
- Improve association management for butchers, including for improved business management;
- Set up mentoring for butchers in business management;
- Technical and business training for apprentices, explore possibilities of butcher association's sub-chapter for young;

- Train women processors in credit management and financial literacy;
- Support in accessing funds from micro-finance;
- Set up mentoring through young graduates working as interns.
- Proposed efforts in skins and leather include: (1) Assess quality of tanned products in different tanneries and develop road map for improvements; (2) Support modern tanning in business contacts; (3) Work with collectors' association to develop mechanisms for value capturing.

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5. Annexes

Annex One: Constraints and Opportunities related to Small Ruminants Production, Inputs, Storage, Marketing and Processing

Constraints and Opportunities Related to Production of Small Ruminants

Constraint	Opportunity	Strategy
Diverse constraints in input access, both for feeds and veterinary services	Increased productivity through improved animal nutrition and health.	Form producers into economic groups. Connect with input traders and auxiliaries through group contracts to reduce prices. Explore willingness of innovative traders for credit for feeds and connect through contracts, starting small and using social links to enforce no side-sales policies.
Dispersed goat milk production in conditions difficult for collection	Continued important role in nutrition, particularly of children	Collaborate with nutrition projects, promoting hygiene
Conflicts over traditional access for migrating herds to pasture and water points		

Constraints and Opportunities Related to Small Ruminant Inputs

Constraint	Opportunity	Strategy
Niger		
<i>Veterinary care:</i>		
Inadequacy of vaccination and veterinary services coverage, especially in Zinder	Large potential market for veterinarians and auxiliaries resulting in increases in productivity.	Support efforts of producers' organizations to attract private veterinarians, starting with Zinder region.
Uneven technical quality of auxiliary care	Improvements can result in improved quality of veterinary care.	Training courses, development of auxiliary networks and peer support
Limited ability by auxiliaries to develop a network of producers	Larger client base would mean financial sustainability and would improve veterinary care.	Business training for auxiliaries.
<i>Feed:</i>		
No significant	Large unmet demand for feeds.	Support enterprises

producers of animal feeds in Niger		interested in initiating production in the existing mills through assistance with business plan development.
Large seasonal increases in fodder prices	As demand exceeds offer, room for development of fodder-focused businesses	Support fodder entrepreneurship in diverse ways, including feed banks for fattening purposes. Business training for women and women groups for selling enriched feeds from cereal residues.
Burkina Faso		
<i>Veterinary care:</i>		
Inadequacy of vaccination and veterinary services coverage	Large potential market for veterinarians and auxiliaries resulting in increases in productivity.	Link producers' organizations to private veterinarians through service contracts. Engage producer organizations in efforts to recruit private veterinarians in underserved regions.
Illegal products in the market, some of the dangerous	Improved confidence in veterinary products would increase use	Organize information campaigns with the veterinary services and private veterinarians.
<i>Feed:</i>		
High cost of feeds	Large unmet demand for feeds.	Support enterprises interested in initiating production in the existing mills through assistance with business plan development.
Large seasonal increases in fodder prices	As demand exceeds offer, room for development of fodder-focused businesses	Support fodder entrepreneurship in diverse ways, including feed banks for fattening purposes. Business training for women and women groups for selling enriched feeds from cereal residues.

Constraints and Opportunities Related to Small Ruminants Marketing

Constraint	Opportunity	Strategy
Producers lack power in the market place	Improved management of markets can lead to higher profit for producers, but also greater revenue for the commune.	Develop market co-management that involves all value chain actor groups, including producers, and a broad representation of groups in the value chain. Support through trainings, development of procedures, and study visits. Producer economic interest groups (see previous section).
Trader credit not extended upstream, to producers	Innovative traders can show how fostering higher quality production and shortening chain can result in greater business.	Support development of vertical linkages between selected traders and producer groups. Assist with contracts and training.
Lack of marketing strategies for the three segments	An in-depth assessment of the potential of the different segments would improve value chain actors' ability to gear efforts to the particular segments.	Conduct a study on the current size and future potential of the three segments. Discuss with value chain actors, government, and the other stakeholders. Develop a strategy on the basis of potential.
Long marketing chain where costs accumulate	Direct consumption market-based trader contacts with producers would likely result in higher producer prices and trader profit.	Fairs for small ruminants. Synchronized fattening combined with producer-trader contracts. Support trader associations and trader direct contacts with Nigeria, including through study visits.
Intermediaries not trusted	Improved professionalization of the intermediaries	Support development of associations of intermediaries and collectors and their contacts with traders.
Poor infrastructure	Improved infrastructure would improve competitiveness	Support studies in market renovation. Support in finance access for equipment and market development.

Constraints and Opportunities for Small Ruminants Processing

Constraints	Opportunities	Strategy
Niger		
Slaughtering in unhygienic conditions, with poor tools and little knowledge of cuts	Greater quality meat can result in higher-profit markets	Technical training courses for butchers and their apprentices. Link with infrastructure improvements in Maradi and Zinder in 2016.
High interest payments by butchers and their dependence on traders for credit	More flexible credit mechanism would allow butchers to buy directly from producers	Butcher revolving funds for improved credit management and flexibility. Butcher improved association management for fund management. Set up mentoring for butchers in business management.
Young butchers lack associations and organizations.	Young more likely to learn and adapt new techniques.	Technical and business training for apprentices, explore possibilities of butchers sub-chapter for young.
Women processors lack access to credit to increase scale and improve infrastructure for food preparation and sales.	Organized processors can seek credit together and agree for mechanisms for sharing.	Train women processors in credit management and financial literacy. Support in accessing funds from micro-finance. Set up mentoring through young graduates working as interns.
Skins and hides:		
Tanning procedures not resulting in high quality product	Improved tanning would result in greater markets, in Niger and outside	Assess quality of tanned products in different tanneries and develop road map for improvements.
Large number of skins are exported without important value addition in Niger	Increased demand in Niger for tanning would help capture a greater share of value	Support modern tanning in business contacts.
Mixed collection of skins does not allow to capture value for high-end skins	Higher profits for various value chain actors from improved collection methods	Work with collectors' association to develop mechanisms for value capturing.
Both:		
Insufficient value addition and markets and poor quality products	Possibilities for income generation through more value addition and better quality	Assess all processors and their products. Support in business plan development and finance access. Support through study visits and market prospection. Support through associations to access technical and entrepreneurship training and standards. Support <i>commune</i> and <i>département</i> level platforms.
Burkina Faso		
Meat:		
Slaughtering in	Greater quality meat can result in	Technical training courses for butchers

unhygienic conditions, with poor tools and little knowledge of cuts	higher-profit markets	and their apprentices.
High interest payments by butchers and their dependence on traders for credit	More flexible credit mechanism would allow butchers to buy directly from producers	Butcher revolving funds for improved credit management and flexibility. Butcher improved association management for fund management. Set up mentoring for butchers in business management.
Poor capacities among butchers	Focus on young as they are more likely to change	Technical and business training for apprentices, explore possibilities of butchers sub-chapter for young.
Women processors constrained by lack of skills in business and technical aspects	Work with women processors' groups	Train women processors in credit management and financial literacy. Support in accessing funds from micro-finance. Set up mentoring through young graduates working as interns.
<i>Hides and skins:</i>		
Tanning procedures not resulting in high quality product	Improved tanning would result in greater markets, in Burkina Faso and outside	Assess quality of tanned products in different tanneries and develop road map for activities.
Large number of skins are exported without important value addition in Burkina Faso	Increased demand in Burkina Faso for tanning would help capture a greater share of value	Support modern tanning in business contacts.
Mixed collection of skins does not allow to capture value for high-end skins	Higher profits for various value chain actors from improved collection methods	Work with collectors' association to develop mechanisms for value capturing.

Small Ruminant Breeds in Niger

Sheep

Oudah: About 50% of Niger's sheep population; also in neighboring countries. Relatively tall, up to 50 kg, and good slaughter animal with carcass yield of 48-50%. Long tail, bicolor, front brown to black and hind portion white, with a dividing circular line.

Ara-Ara: About 36%, esp. in Northern Niger. Height 60-80 cm, small ears and spiral horns in males; females hornless. Hardy, good for fattening, even with extensive grazing, good milk producer.

Bali-Bali: A Peulh sheep also found in Burkina Faso and Mali. Tall, over 80 cm, up to 30-50 kg, typically white although some are black-pie. Long and wide ears, males have horns. Considered a good slaughter animal but poorly known.

Balami: Especially found in Dakoro, Maradi. Tall, uniformly white, very long and white ears, big head and long tail falling below the hocks. One type with spiral horns in males; another without. Poorly known but highly prized for fattening.

Koundoum: Reared by the Niger River. Up to 50-60 cm and 40 kg. Typically spiral horns, short ears. Full wool cover or only the hock. Black, due to cross-breeding occasionally white. Quick weigh-gainer, high carcass/wool yield; considered fertile.

Others: Dane-Zaila (Arabic, from N'Gourti) and Hadine (Toubou black sheep from N'Guigmi).

Goats:

Sahel Goat: Very common, in all countries of Sahel. Tall (80 cm) with variable color coat, weighing up to 35 kg, with short and fine hair.

Chèvre Rousse de Maradi: In southern Niger and northern Nigeria; sub-types to West and East. Uniform mahogany color, small (65 cm, 35 kg), prolific reproducer, good milk producer and slaughter animal. Greatly appreciated, especially for its supple skin. Adapted only to sedentary, agro-pastoral systems.

Sources: Niger's *Ministère de l'Elevage* 2014; Fadiga and Fall, 2014.