FICHE GHANA

Etat des filières laitières dans les 15 pays de la CEDEAO, de la Mauritanie et du Tchad

Annexe 5 : Fiche Ghana

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Avertissement

Ce rapport Ghana constitue l'un des 13 documents nationaux servant de base à la formulation d'une offensive lait au niveau la CEDEAO. Il constitue également l'un des cinq rapports pays dont l'élaboration a été confiée à VSF-B (Côte-d'Ivoire, Burkina, Mali, Niger, Ghana).

Les résultats de ce travail sont basés sur une revue bibliographique ainsi que sur des visites de terrain conduites auprès des autorités publiques et des acteurs de la filière.

La présente fiche du Ghana a été rédigée par Dr. Bonodong Z. Guri, Godwin Ameleke et Naaminong Karbo. Les auteurs adressent leurs sincères remerciements à toutes les personnes qui les ont aidées et ont facilité cette mission.

Les idées et opinions exprimées dans le présent rapport sont celles des auteurs, et n'engagent ni le CIRAD ni le Hub Rural.

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The State of the Dairy Sector in Ghana

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List of acronyms and abbreviations

AFD	Agence Française de Development
AfDB	African Development Bank
ADF	African Development Fund
AI	Artificial Insemination
APD	Animal Production Directorate
ARI	Animal Research Institute
CBPP	Contagious Bovine Pleuropneumonia
CLW	Community Livestock Workers
CSIR	Council for Scientific and Industrial Research
DPs	Development Partners
ECOWAS	Economic Community of West African States
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
FAO	Food and Agriculture Organization
FDA	Food and Drugs Authority
FIG	Figure
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GoG	Government of Ghana
GRA	Ghana Revenue Authority
GSS	Ghana Statistical Service
Kg	Kilogramme
IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Centre
ILRI	International Livestock Research Institute
LDP	Livestock Development Project
MoFA	Ministry of Food and Agriculture
NGO	Non-Governmental Organization
NHIL	National Health Insurance Levy
NLSP	National Livestock Services Project
PARC	Pan-African Rinderpest Control
PACE	Pan-African Programme for the Control of Epizootics
PPR	Peste des Petits Ruminants
SRID	Statistics Research and Information Directorate
USAID	United States Agency for International Development
TARGET	Technology Applications for Rural Growth and Economic Transformation
VAT	Value Added Tax
VSD	Veterinary Services Directorate
WAD	West African Dwarf
WASH	West African Short Horn
WB	World Bank

Executive Summary

The primary objective of this consultancy was to assess the dairy value chain in Ghana. Specifically, the consultancy was to do the following: first, give an overview of Ghana's livestock in general and dairy sector in particular and assess its contribution to the Ghanaian economy, estimate production by species and describe its evolution over the last two decades, estimate imports (by type of dairy products), and estimate consumption and its evolution over the last two decades. Second, assess the dairy value chain including structuring of collection, number of functional collection centres, number of dairy, mini dairies including industrial dairies using milk powder, map value chain, and describe the role of women in the value chain. Third, give an overview of dairy policies including a brief history of dairy projects over the last two decades, describe dairy products in progress, present an overview of fiscal and commercial policies including import duties, taxes, rules and standards in force. Four, provide a sense of what the future of the dairy sector will be.

To provide the information required, several methods were used to generate the required data. Literature was reviewed, key informants were interviewed, and a rapid market survey carried out.

The livestock sub-sector contributes meat, milk, manure, and animal power to the economy of Ghana. On average, the contribution of the livestock to Agriculture GDP, between 2011 and 2017, is 5.4 percent. The livestock production system is either extensive, semi-intensive or intensive. Milk production in Ghana is exclusively from cattle. The predominant livestock/milk production system is extensive. The main cattle breeds in the production systems are the West-African Short Horn (WASH), and the Sanga which is a cross between the WASH and white Fulani. Milk yields in the extensive production system based on local breeds is not high. The more intensive systems are based on either crosses between local breeds and exotic breeds (for example Sanga Friesian crosses), or pure breeds like Jerseys.

In spite of the low milk yields, significant volumes of milk can be collected from various kraals. The volume of milk production has been fairly constant (36,000 – 43,000 tonnes per annum) over the past two decades. On the other hand, imports of milk and milk products have been soaring with milk powder been the main product that is imported. Other milk product imports include cheese, evaporated milk, condensed milk, and fresh whole milk. The supply of all milk products (comprising local production and imports) had generally being rising.

Generally, there are two distinct dairy value chains, one based on local fresh milk as raw material for processing and the other based on imported milk products particularly milk powder. The actors in the value chain based on local fresh milk include herdsmen and cattle owners, at the production level, herdsmen's wives (as processors), itinerants who go from kraal to kraal to collect milk, *fura* sellers who sell milk with cereals food products, and household consumers as final consumers. There is hardly any functional milk collection centre where milk is sent for bulking and chilling. In this value chain, mini processors may receive milk supply from producers, or itinerants which they use to process dairy products, mainly yoghurt. The processors are often women. Also, women hawk milk and milk products to final consumers.

In the value chain based on imported milk powder, big processing companies are often themselves importers. Also, there are two types of companies, those that reconstitute milk from imported milk powder, water and other ingredients, and those that use the imported milk powder to produce yoghurt and ice-cream. Several mini dairies also process yoghurt from milk powder.

Over the last two decades, several projects had been implemented to improve the livestock sector in general, and the dairy sector in particular. Projects that targeted livestock generally dealt with disease control, and fodder bank establishment. Aspects of projects that dealt with dairy in particular related to the establishment of pilot milk collection schemes. Bulk tank and chilling facilities were provided to some government organisations that were to serve as the pivot of the scheme. Follow up projects implemented training programmes for milk processing in selected areas of the country. Non-governmental organisations also imported and distributed Jersey cattle among farmers for milk production.

Currently, few projects exist that target the livestock sub-sector. The on-going planting for food and jobs programme targets the livestock sector only to the extent that surplus cereals and legumes could provide feed for livestock.

Milk and milk product imports are generally subject to import duty and taxes like Value Added Tax (VAT), National Health Insurance Levy (NHIL), and the educational reform tax. However, import duty level varies depending on the type of milk product imported. The Food and Drugs Authority (FDA) has laid down regulations that guide the operation of food processing companies.

Growth in the output of local fresh milk is slow. Thus, growth of dairy product output in the value chain depending on local fresh milk is likely to remain constant or grow only slightly. On the other hand, growth in dairy product output in the value chain based on imported milk products is soaring, judging from the increasing levels of milk powder over the last two decades. To promote growth in the value chain that depends on local fresh milk, steps need to be taken to improve milk production, and collection. Then small and medium scale enterprises can be encouraged to go into dairy products production, particularly yoghurt production.

1: Introduction

1.1 Synoptic overview of the weight

Ghana, officially the Republic of Ghana and formerly the Gold Coast, is situated in the centre of the countries along the Gulf of Guinea in West Africa. The country has an area of 238,530 square kilometers and lies between latitudes 4°44' and 11°11'N and longitudes 01°12'E and 03°11'W. It is bordered on the east, west and north by the Republics of Togo, Côte d'Ivoire and Burkina Faso respectively. It is a tropical country consisting of three broad ecological zones, which are the Forest, Forest-Savannah Transition and the Savannah zones.

Agriculture is Ghana's most important economic sector, employing more than half the population on a formal and informal basis and accounting for almost half of GDP and export earnings. The Agricultural sector consists of four sub-sectors namely; crops, livestock, fisheries, and forestry.

The human population in 2014 was 26,777,000; about 11,837,000 people lived in rural areas and derived their income mainly from agriculture and related activities. The economic active population engaged in agriculture was estimated at 2,343,000 (FAO, 2015). Overall, 45.8 percent of all households in Ghana are agricultural households, of which 95.1 percent is engaged in crop farming (GSS, 2012). It is estimated that about 74 percent of the agricultural households are engaged in livestock rearing alongside crop farming (Oppong-Anane et al., 2008).

The livestock sub-sector contributes significantly to the national economy and plays a multifaceted role in providing livelihood support to the rural population. The agricultural sector GDP for 2017 grew by 8.4%, exceeding 2016 rate by 5.4 percentage points and the livestock sub-sector and livestock grew by 5.4 percent (GSS, 2018). The contribution of the livestock sector to the national GDP (see Table 1) however, does not include the value of secondary products, such as manure, draught power and transport, which are provided to the crop sector.

Table 1. 1 Contribution of agriculture and livestock to GDP

National GDP	2011	2012	2013	2014	2015	2016	2017*	Average
	GDP at current market prices by economic activity (GHc million)							
Agriculture	14,155	16,668	20,232	23,278	26,134	29,565	35,047	23,582
Livestock	1,004	1,162	1,223	1,318	1,558	1,832	2,119	1,459
Share of livestock (%)	7.09	6.97	6.04	5.66	5.96	6.20	6.05	5.43
	Distribution of GDP (at basic prices) by economic activity							
Agriculture	25.3	22.9	22.4	21.5	20.3	18.9	18.3	21.4
Livestock	1.8	1.6	1.4	1.2	1.2	1.2	1.1	1.4
Share of livestock (%)	7.11	6.99	6.25	5.58	5.91	6.34	6.01	6.31
	GDP at 2006 prices by economic activity (GHc million)							
Agriculture	6,507	6,657	7,035	7,362	7,567	7,790	8,441	7,337
Livestock	552	581	612	644	678	714	753	648
Share of livestock (%)	8.48	8.77	8.69	8.74	8.96	9.17		7.54
	Growth rates of GDP at 2006 constant prices (Percentage)							
Agriculture	0.8	2.3	5.7	4.6	2.2	3.0	8.4	3.9
Livestock	5.1	5.2	5.3	5.3	5.3	5.3	5.4	4.5

Source: GSS (2018) *Provisional; Current US$1.00 = Ghc 4.36

It provides employment generation opportunities to a large part of the population, particularly in the rural areas. It offers prospects for wealth creation, income enhancement, coping mechanism against crop failure, financial security and improvement in rural livelihoods (Oppong-Anane et al., 2008).

The use of bullocks for land preparation allows farmers to crop larger areas than would have been possible in view of the high cost involved in using tractor power.

Among the numerous contributions, the livestock sector's main contribution to the national economy is food and nutritional security as it provides animal protein; meat and dairy to enhance the nutritional status of the human population.

Livestock supply not only meat, milk and eggs, but also skins for leather, bones, blood and horns for animal feed

Livestock provides the cash resource during the non-farming season and a safety net of capital assets to face grave financial difficulties. Livestock may also be sold to increase farm size and to procure inputs such as seeds, fertilizer, farm tools and labor. Livestock stabilizes the socio-economic capability of households by providing reliable income in times when prices of crops are low due to bumper harvest (Oppong-Anane, 2013).

The milk value chain describes the full range of activities which are required to bring livestock, milk products and their by-products or service from conception, through the input of various services, the different phases of production (involving a combination of physical transformation such as processing) to the delivery of products to final consumers, and final disposal after use. Heifer International and International Livestock Research Institute (ILRI) are some major Development Partners (DPs) in the country which focused on livestock/ milk value chain development and better market access for smallholder producers in the country. However, in general, value chain development in the country's livestock sector is limited (Akunzule, 2012).

The Government of Ghana (GoG) with assistance from some Non-Governmental Organisations (NGOs) and Donor Partners have applied a number of instruments in the implementation of projects to address the constraints in the livestock/milk sector. However, most of the projects did not achieve the desired impact. This might have resulted partially from too much emphasis being put on production with not enough attention given to the other components along the livestock/milk value chain. It is expected that future development in the livestock/milk sector will be more successful and sustainable if interventions are done using the value chain approach.

The objective of the consultancy was to review the livestock/milk value chain and take stock of policies influencing it, in order to propose specific strategies and actions for improving the productivity of the local livestock, improve local industry's supply of fresh milk and promote an environment conducive to the promotion of local milk value chain. More specifically, the following were to be undertaken; i. Establish the current status of livestock/milk value chain and identify the role and place of women in the value chain, ii) Conduct an inventory of current policies on livestock/milk value chains and identify gaps, iii) Identify projects and programmes for the development/enhancement of livestock/milk value chain over the last two decades iv) Identify policies facilitating the development or enhancement of livestock/milk value chain and to prospect and propose innovative strategies to promote the local milk value chain in the country.

Data were sourced directly or indirectly from international organizations such as the Food and Agriculture Organization of the United Nations (FAO), Ghanaian public sector institutions, private sector organizations and farmer/processor associations as well as some key actors involved in the livestock sector. Data obtained from field studies were used to fill gaps and confirm some secondary data.

1.2 Sources of milk production

In Ghana, milk for human consumption is mainly produced from cattle. Thus, milk production in this case refers, to milk from cattle. Ghana has about 1.9 million cattle (MOFA, 2017a). There are 4.9 million sheep, 7.1 million goats, 75,363 million poultry and 816,000 pigs.

Herdsmen do milk production, majority of whom are Fulanis. According to Hill (1964), Omore, Muriuki, Kenyanjui, Owango, and Staal (1999), and Addo et al. (2011), in the southern Savanna of Ghana, herds are generally larger in size mainly between 20 and 200. In many cases however, these herds are property of absentee owners and cared for by hired Fulani herdsmen. Their remuneration most of the time is the right to the milk sold from the herds as well as a third calves from a female. This milk is then sold either fresh or processed in the Urban and peri- urban areas of the country. The farming families also use some for home consumption as well as feed calves. The herdsmen's wife may generate some extra income by the production of wagashi a soft cheese prepared from fresh milk (Omore et al., 2009).

Average daily milk yields of cattle are as follows: WASH 0.5 kg, Sanga 1.0 kg and Zebu 3.0 kg, Sanga x Friesian crossbred6.5 kg, Jersey 14 kg. Average milk per yield per lactation period are as follows: WASH 75 kg, Sanga 220 kg and Zebu 825 kg, Sanga x Friesian crossbreed 1,950 kg and Jersey 4,480 kg (Oppong-Anane et al., 2008). Some farmers get as much as 20 kg of milk per day from the crossbreds and Jersey cows.

1.2.1 Livestock of the country

1.2.1.1 Ruminants

Ruminant livestock herd and flock sizes vary among the different production systems and ecological zones. The average herd and flock sizes in the traditional farming system are as follow: cattle 10, sheep 9 and goats 10 animals. The sizes are higher in the Sudan Savannah, Derived and Guinea Savannah zones than in the Forest and Coastal Savannah zones (Oppong-Anane et al., 2008).

Average body weights are: cattle 200 kg, sheep 25 kg, goats 20 kg and pigs 70 kg (Oppong-Anane, 2013). Average carcass weights are: cattle 125 kg, sheep 15 kg and goats 13 kg, and off take rates are: cattle 11 percent, sheep 30 percent, goats 30 percent and pigs 42 percent (SRID, 2014). The Forest zone has the highest sheep and goat off-take rates with the Sudan Savannah zone having the highest rate for cattle. Parturition rates are: cattle 61.6 percent, sheep 86 percent and goats 96.5 percent. The highest birth rates of cattle, goats and sheep are found in the Forest and Derived Savannah zones respectively (Oppong-Anane et al., 2008).

Average mortality rates are: cattle 13.7 percent, sheep 20.4 percent and goats 32.3 percent. The Sudan Savannah zone has the lowest mortality rates for all the ruminant species (Oppong-Anane et al., 2008). Under improved management systems as pertains on MoFA Livestock Breeding Stations, post-weaning mortality rates are 5.3 percent for WASH, 4.8 for Sanga and

exotic crossbred cattle. Djallonké sheep mortality is 1.0 percent, 0.2 for Djallonké and 3.3 percent for Sahelian goats (APD, 2008).

1.2.1.2 Non Ruminants

Pigs: The average pig flock size is 8 animals. Post-weaning mortality rates for the Ashanti Black and Large White pigs are 3.4 and 3.1 percent respectively. Parturition rates are eighty (80%) percent for Ashanti Black pigs and seventy five (75%) percent for Large White pigs (APD, 2008).

Poultry: Domestic fowl size is 16.1 hens per household, cycle of laying/hen/annum is 3.3, eggs per clutch are 12.3 and egg production per household is 635 per annum. The cycle of egg laying per year and egg per clutch are highest in the Forest zone and the Derived Savannah zones respectively (Oppong-Anane et al., 2008).

1.2.1.3 Non-conventional Livestock

Rabbits and Grasscutters: Rabbit holding ranges from 5 to 25 animals per farm. Organised mating of rabbits result in 3 to 5 kindlings per year, and a doe produces 16 kits, on average, per year. The medium-scale commercial holdings have 112 rabbits. An average rabbit holding has a ratio of 10.8 percent bucks, 27.8 percent does and 61.3 young rabbits (Osei et al., 2012). Birth and weaning weights of grasscutter are 123.6 and 535.6 grams respectively. Litter size at birth and weaning are 4.3 and 3.8 animals respectively. Pre-weaning daily gain is 6.9 grams; post weaning (2 to 4 months) daily weight gain is 413 grams, 6.8 grams from 2 to 4 months, 6.2 grams from 4 to 6 months and 6.2 grams from 6 to 8 months. Pre-weaning mortality is 11.2percent and post-weaning mortality is 12.3percent (Annor, Ahunu, Aboagye, Boa-Amponsem, & Cassady, 2012).

1.2.2 Livestock system

Ghana's agriculture is predominantly smallholder, traditional and rain-fed, and the farming systems vary. There are three main farming systems, crop only, livestock only and crop-livestock systems, with the second and third systems giving rise to the prevailing animal production systems. The major system practiced nationwide is mixed farming (crop-livestock system) where about 74 percent of the rural households cultivate crops and rear some livestock (Oppong-Anane et al., 2008).

1.2.2.1 Non-ruminant production systems

Pigs: Semi-extensive pig production occurs under the traditional smallholder practice in the rural areas. The system is based mainly on the indigenous Ashanti Black Forest pig which is found throughout the country and constitutes about 70 percent of the national pig population. Crosses between the indigenous and exotic breeds are also used in this system. The pigs are kept in pens and given minimal feed based on household leftovers, and in particular fresh and boiled cassava and cassava peels. In some cases, the pigs are allowed to scavenge for food. Intensive pig production system is based mainly on the exotic Large White and Landrace breeds and their crosses. The system, practiced mainly in the southern areas of the country is commercialized and may be classified as small, medium or large scale (Oppong-Anane, 2010).

1.2.2.2 Ruminant production Systems

Sheep and Goats: The extensive small ruminant production system consists largely of free grazing village flocks of Djallonké sheep and goats normally exhibiting poor productivity. Diseases, mostly helmithiasis and peste des petits ruminants, are the main causes of poor productivity and high mortality among the animals. The system is progressively changing into semi-intensive system where simple pens are provided for the animals, and is based on limited grazing and cut and carry of forages, and the use of household wastes, mainly cassava pellets

and peels, and plantain and yam peels. Other available crop residues and crop by-products such as groundnut tops, maize stover and rice straw are also used. The intensive system is similar to the semi-intensive except that in the former all the feed is provided in the pen. The system supplies fattened rams and bucks for the urban market, particularly during religious festivities. Crossbreds of the Djallonké sheep and goats with the long-legged and larger Sahelian sires are common in the intensive system (Oppong-Anane, 2011).

Cattle: There are three cattle production systems, extensive, semi-extensive and commercial systems. The extensive beef cattle production system is the main cattle production system practiced in the country and is based mainly on extensive grazing by smallholder herds. It may be linked with a milk production system whereby milk is shared between the herdsman and the calf, with the surplus going to the market (Okantah, 1992). Very few cattle farms fall under the semi-intensive system where the feeding is supplemented with crop residues. In this system, some herds of cattle are owned mainly by professionals and businessmen living elsewhere with little or no involvement in the management of the animals (Oppong-Anane, 2010). The very few cattle found in intensive system are on institutional farms. The system is also practiced by about a hundred households keeping Friesian-Sanga crossbreds or Jersey cows at backyards in the peri-urban areas of the Greater Accra and Eastern regions (MOFA, 2016).

Over 90 percent of the domestic milk production comes from agro-pastoral herds with low milk off- take of about 0.8 and 0.4 kg/cow/day in the rainy and dry seasons respectively. The local breeds of cattle used in this system have low genetic potential for milk production and remain mediocre producers even when the best possible feeding and husbandry conditions are available. There are about a hundred households keeping between one and six dairy cows at their backyards on commercial basis, and using Friesian - Sanga crossbreds or Jersey cows in the peri-urban Savannah areas of the Greater Accra and Eastern regions. Such cattle may produce as much as 2 700 kg of milk per lactation (Oppong-Anane et al., 2008).

1.2.2.3 Breeds

a) Cattle: The most prominent cattle breed in the country is the West African Shorthorn (WASH). The name of the breed is coined as a general descriptive term to cover all the variations of small non-humped cattle, generally black and white in colour but sometimes fawn and white. It is an indigenous tough breed of cattle, thick set with short fine-boned limbs. Zebu influence in the WASH becomes much more marked towards the northern frontier of the country and especially towards the north-east where the tsetse challenge is much less as it has developed a degree of tolerance to tsetse-borne trypanosomiasis (ADF, 2001). The breed was thought to comprise in excess of 65 percent but accounted only 47 percent of the national cattle herd in 2001 (Ahunu and Boa-Amponsem, 2001) and declined to 39.3% in 2011 (Akunzule, 2012).

The decline of the WASH over the years is mainly as a result of non-adherence to conservation methods and the use of exotic and larger breeds for cross breeding purposes. The highest concentrations of the WASH are in the Upper West region, followed by the Northern Region and Upper East Region. They are distributed in smaller concentrations in the seven remaining regions of Ghana. A majority are raised under low-input systems in the Guinea Savannah zone. The Kokombas in the Demon area of Zabzugu and Tatale districts in in the Northern Region have formed WASH Breed Association to maintain the pure breed because of their believe that the animal has served their ancestors very well and continue to have adaptive traits that are suitable for their farming systems.

The Sanga, a natural cross between the WASH and the large humped Zebu cattle, follows the WASH in abundance and are distributed throughout the country, with highest concentration in

the Volta Region within the Coastal Savannah zone. The Zebu breeds (mainly White Fulani and Sokoto Gudali), which are susceptible to trypanosomiasis, are found mainly in the tsetse fly free areas of Northern, Brong-Ahafo and Ashanti Regions.

A few N'Dama cattle, which are trypanotolerant, are found in the Northern and Western Regions. There are also several indigenous breed crosses such as the N'Dama x WASH and N'Dama x Sanga (Aboagye, Boa-Amponsem, Okantah, Osei-Amponsah, & Ayizanga, 2014). A few Jerseys, exotic dairy cattle, are found in the peri- urban areas in the Coastal Savannah zone of the country. Dairy cattle comprising Frisian X Sanga and Jersey x Sanga crossbreds, initially produced through artificial insemination with imported semen at the Amrahia Dairy Farm of MoFA (APD, 2003) are found on dairy farms in the Coastal Savannah zone. Some famers now use bulls with various degrees of exotic genes for mating Sanga cattle for milk production.

b) Sheep: The major sheep breed, the indigenous West African Dwarf also known as Djallonké sheep, is distributed nation-wide. The breed is acknowledged for its hardiness, trypanotolerance, prolificacy and suitability for year-round breeding. Although it is a small animal, with an adult weight of 25 to 30 kg in males and 20 to 25 kg in females, the Djallonké does not exhibit traits associated with dwarfism (ADF, 2001). Due to several breed improvement projects implemented by government and non-governmental organizations (NGOs), crossbreds are now found all over the country.

c) Goat: Most goats in Ghana are of the indigenous West African Dwarf (WAD) also known as Djallonké, an achondro-plastic dwarf. The adult male weighs 20-25 kg and the female 18-22 kg. The breed is very prolific, precocious and trypanotolerant and are found throughout the country (ADF, 2001). The highest concentrations are in the Upper West and Upper East Regions under low input systems. Sahelian goats can be found mostly in the Northern and Brong-Ahafo Regions, raised under medium-input systems (Aboagye et al., 2014). It is also commonly kept at backyards in the urban areas.

1.3 Estimate of milk production by cattle and its evolution over the last two decades

Over the last two decades fresh milk production in Ghana increased but very gently (Fig 1.1). Production rose from about 36,000 tonnes in 1996 to about 43,000 tonnes in 2016.

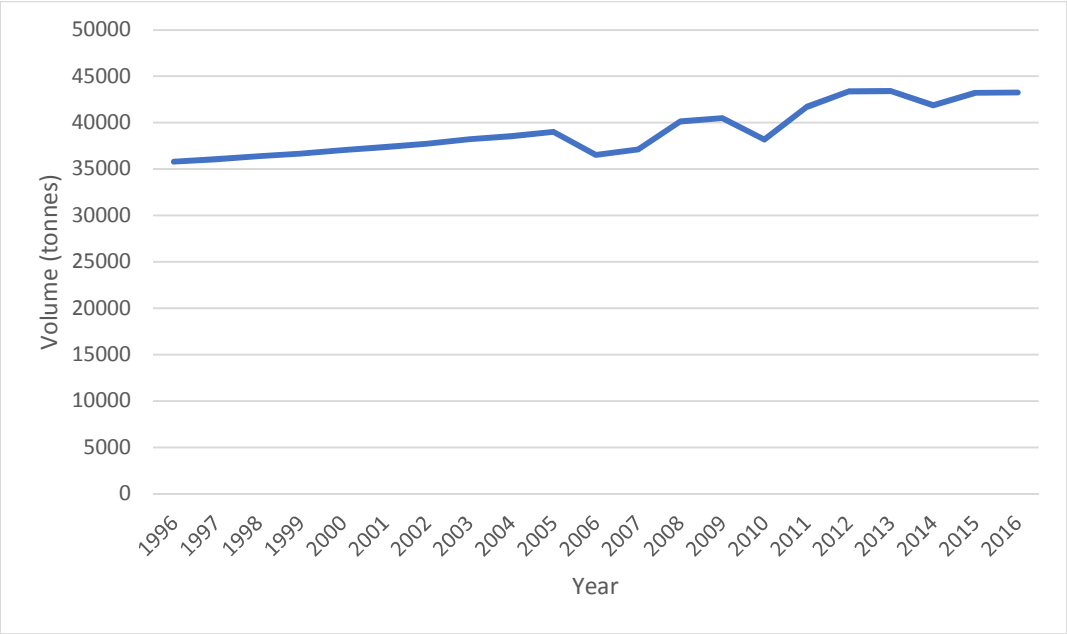

Figure 1. 1 Annual volume of fresh milk production in Ghana

Source: (FAO, 2018c).

1.4 Estimated imports by type of dairy products

Generally, import volume of all dairy products increased between 1996 and 2016. By far, the product type imported most is dry skimmed milk. Other products that were also imported in large quantities were condensed whole milk, evaporated whole milk, and dried whole milk. Yet, dry skimmed milk imports were often more than double the imports of evaporated whole milk, condensed whole milk, or dried whole milk. Fresh whole cow milk was generally low (under 3,500 tonnes) but seemed to be on the ascendency. Import quantities of skimmed milk, whole milk cheese, processed cheese, milk products of natural constituents were generally low (under 2000 tonnes). Also, butter imports were generally low but increased from 1996 to 2006 and then began to fall (Fig 1.2).

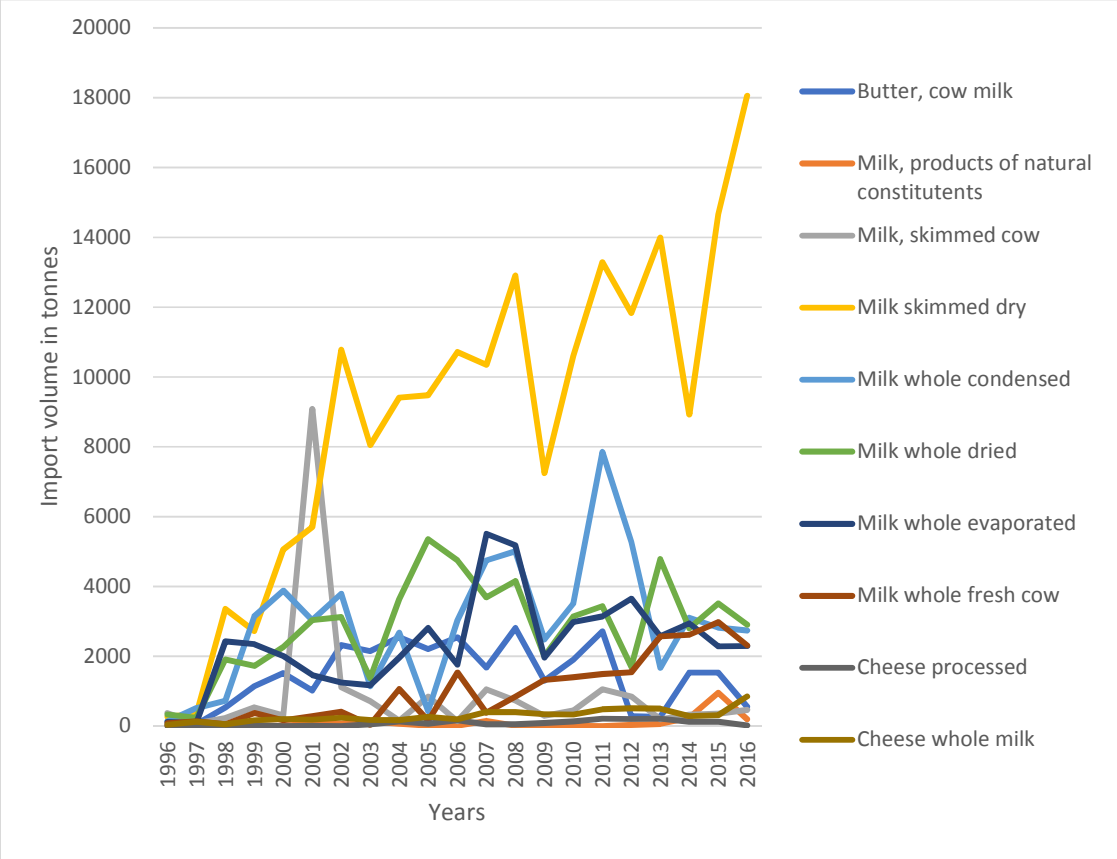

Figure 1. 2 Volume of dairy products imports into Ghana

Source: (FAO, 2018a)

The trends in value of dairy products imports did not differ much from the trend in the volume of imports. Again, dry skimmed milk was imported the most, and value was often at least double the value of any of the other imported dairy products (Fig 1.3).

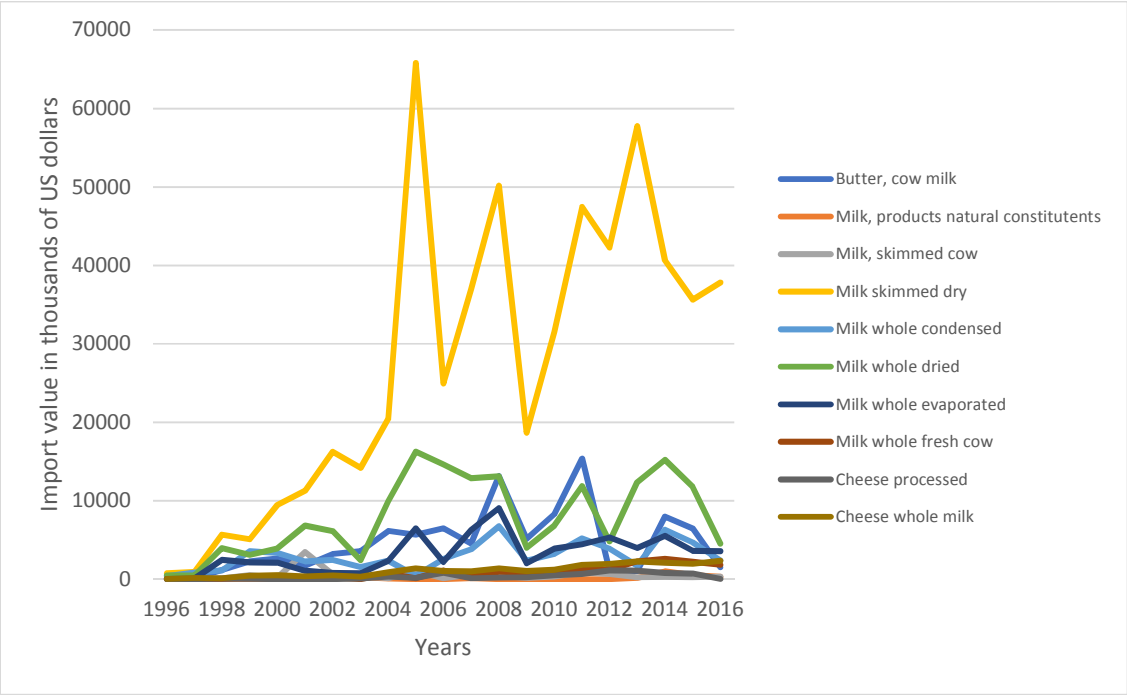

Figure 1. 3 Value of dairy products imports into Ghana

Source: (FAO, 2018a)

1.5 Estimation of consumption and its evolution over the last two decades

Data on actual consumption of dairy products was not readily available. Nevertheless, we used food supply, which refers to the total amount of commodity available for human consumption, as a proxy for consumption. This data was obtained from FAOSTAT and is computed from country production and trade data of food commodities.

The supply of all milk products excluding butter increased over the period between 1996 and 2013. It increased from about 43,000 tonnes in 1996 to about 240,000 tonnes in 2013. The supply of whole milk was usually around a third of the supply of all milk products excluding butter. The supply of butter, cheese and cream as food was comparatively low, under 3000 tonnes, (Fig 1.4).

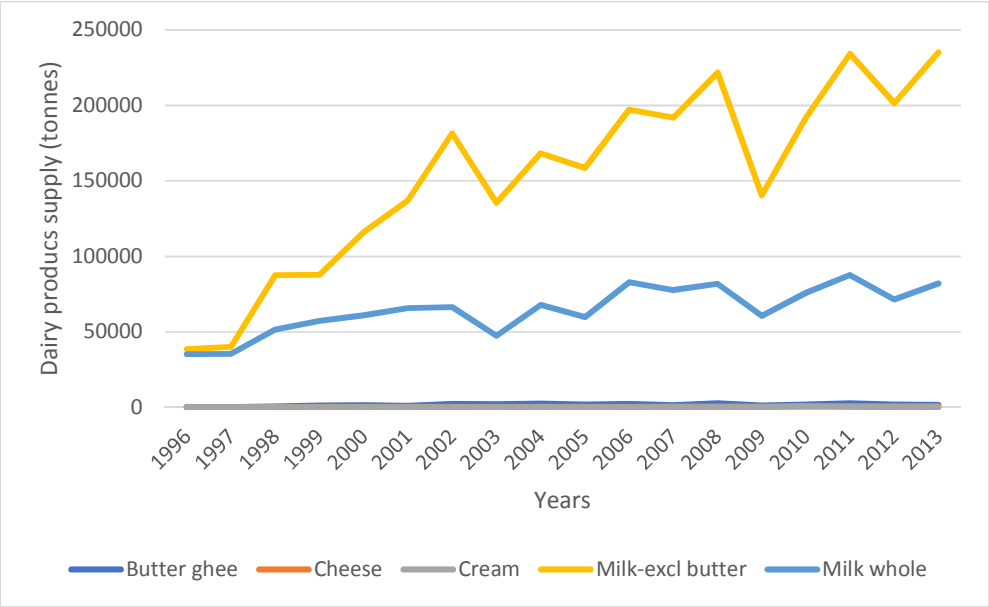

Figure 1. 4 Annual food supply from dairy sources

Source: (FAO, 2018b)

2.0 Structuring the collection

2.1 Number of functional collection centres

There is hardly any organised milk collection in Ghana currently. In the past, under the National livestock Service Project, 1993-1999, attempts were made to establish milk collection centres at the Amrahia Dairy Farm, and at Sege in the Dangme East (now Ada West) district (WB, 1992). Further attempts were made to sustain the gains in the development of milk collection schemes under the Livestock Development Project (2002-2008) (ADF, 2001). Yet, the Sege milk collection centre intended to be operated by the Sege Cattle Farmers Association in no longer functional. The physical infrastructure for milk storage and chilling are still present but are not being operated. The facilities at the Amrahia Dairy Farm are functional, but there is no organised milk collection from farmers to this centre. The centre trains individuals interested in milk processing and also processes some dairy products, especially yoghurt, for sale to the public.

2.2 Number of dairies/mini dairies including dairies using milk powder (fresh products and repackaging)

Milk production, processing and marketing (dairying) occurs at various scales and levels. Dairying occurs at the cattle kraal (farm) level where the herdsman, whose remuneration often includes milk, milks cows and sells the surplus that he does not use for food. Alternatively, he may give the milk to his wife to sell or process it into cottage cheese (*wagashi*). Although local cattle breeds are not very good milking animals, milking is done in most kraals.

Some processors collect milk from the kraals for processing into yoghurt, and other products such as ghee for a niche market. The numbers of these processors (mini dairies) is not large and are concentrated in the peri-urban areas where there is demand for value added products like yoghurt.

Agricultural institutions like research institutions, universities, and breeding stations operate dairies including dairy plants for research, training, and commercial purposes. These dairies, which could also be considered as mini dairies, are few. Institutions having these dairies include the CSIR-Animal Research Institute, the University of Ghana, the Kwame Nkrumah University of Science and Technology and the Amrahia Dairy Farm.

There are a few large factory type enterprises (industrial dairies) that process milk. These factories predominantly use imported dry milk powder as their raw material. They also come in two categories according to the product type, canned reconstituted liquid milk, or fermented products like yogurt. The companies that produce liquid milk include Nestle Ghana, and PZ Cussons (Apori, Oppong-Anane, Osei, & Dwumoh, 2010). Fan milk Ghana Ltd is the market leader in yoghurt and ice cream production in Ghana and has a nation-wide coverage. Lately, another company, EMIGOH Ghana, has emerged in the yoghurt market and distributes its products in a few of Ghana's 10 administrative regions.

There are also trading companies that import dairy products for retailing. These include Kwatson Ghana, and Max Mart.

The Ghana Cocoa processing company also imports milk which it uses in its manufacture of chocolate.

2.3 Structuring of actors: associations, cooperatives, platforms, inter-professions

Several categories of actors can be identified along the dairy value chain including input suppliers, milk importers, farmers/producers, collectors, bulking and cooling facility operators, processors, wholesalers, retailers and consumers. Also, organisations like research institutions, banks and other financial institutions, and the Food and Drugs Authority (FDA) support the activities in the value chain. Government through its ministries, such as the Ministry of Food and Agriculture, and Ministry of Trade and Industries, provides an enabling environment for optimal functioning of the value chains (Fig 2.1).

Generally, two main value chains can be recognised. The first is value chain that uses locally produced fresh milk for processing of other products. The second value chain uses imported milk products for further value addition. The local fresh milk produced relies on smallholders who use mainly extensive production systems. In the extensive system, milk production typically involves herders (who often receive milk as their remuneration) or cattle owners who retain their milk. Herdsmen consume part of the milk produced at home and give the rest to their wives. Herdsmen's wives process the milk into soft cheese (*wagashi*) and sell them to household consumers. Itinerant collectors also go from kraal to kraal to collect fresh milk which they supply to *fura* sellers, or other milk processors who operate mini dairies. Operators of mini-dairies sometimes receive their supply of fresh milk directly from the kraal (Omore et al., 2009). Cattle owners sometimes come together as a group, collect milk, bulk and chill it, and then supply to mini dairies.

A few producers operate semi-intensive production systems using cross-bred animals (Friesian Sanga crosses), while others who keep exotic breeds like the Jersey operate intensive system. These more intensive producers also supply mini dairies/processors with their fresh milk or process them themselves. The extensive production system purchases mainly veterinary drugs and services and virtually no supplementary feed. However, the semi-intensive and extensive production system purchases both veterinary drugs and services, and feed for their cattle (Fig 2.1).

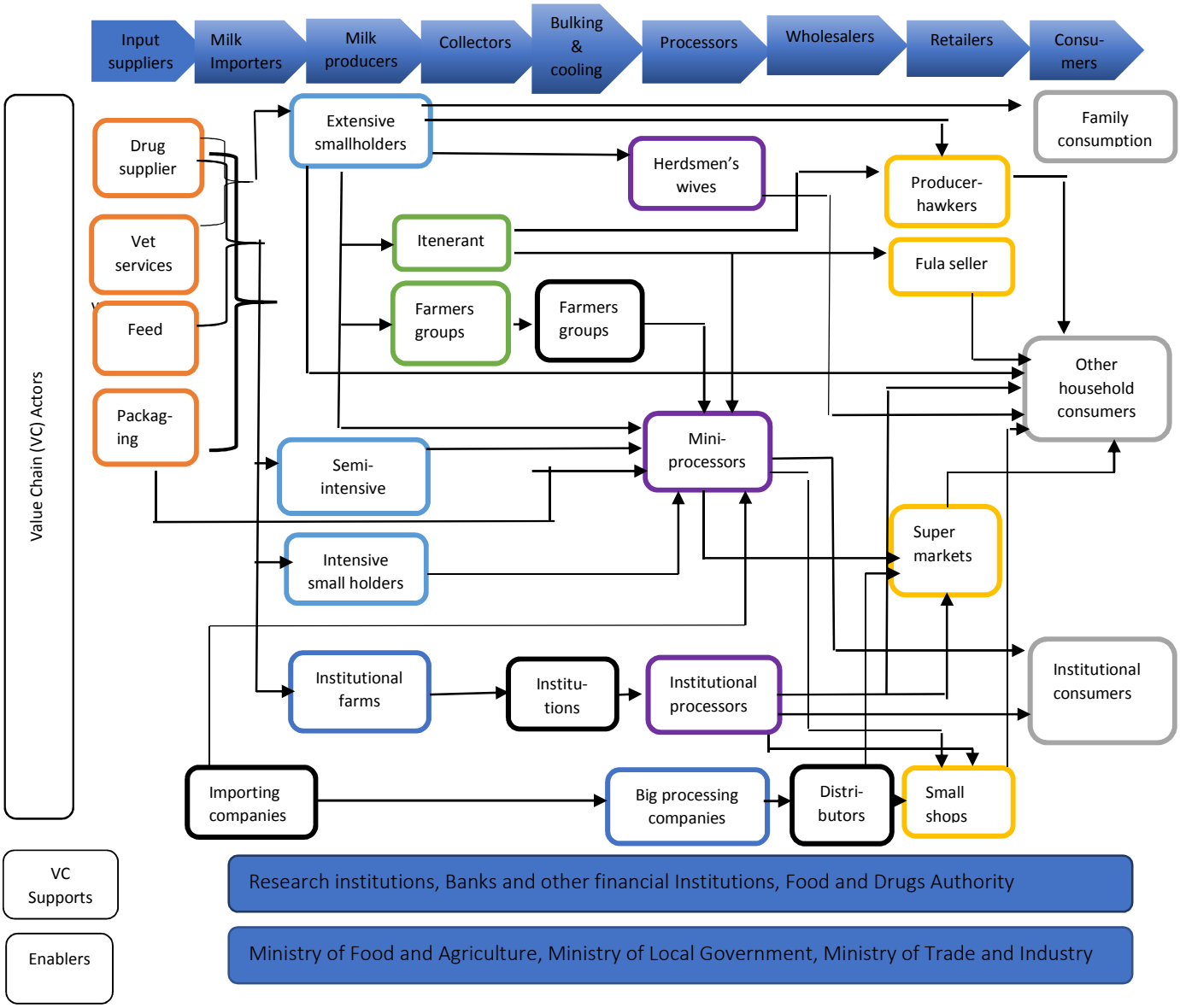

Figure 2. 1 Ghana dairy value chain

Institutional farms sometimes use all three production systems based on the breeds of animals they keep with the intensity of the system increasing with percentage of exotic blood in the animals. Institutional farms often process their own milk in mini dairies and sell directly to consumers or through small shops, or institutional consumers such as schools/university communities. Mini processors sometimes sell products such as cheese to pizza producers. Mini processors/dairies often receive from suppliers packaging materials such as plastic bottle, sachets, and labelling materials which they use in packaging their products.

In the value chain depending on imported milk, production involves reconstitution of milk from milk powder, water and other ingredients, or the production of yoghurt and ice cream. Supermarkets can source their products directly from these big milk-processing factories and sell them to final consumers. Alternatively, the processing companies supply their products to the distributors from whom small shops can purchase products and sell to the final consumer. The big yoghurt producers also use bicycle vendors to reach the final consumer. The bicycle vendors receive their supplies from distributors or wholesalers (Fig 2.1).

Table 2 lists actors in the traditional milk value chain and describe their roles.

Table 2. 1 Actors in the traditional milk product markets in Ghana

Type of seller	Description
Producer-seller	Producers who sell milk they produce from the kraal or farm. They are made up of herdsmen and their wives.
Processors	These are actors or agents who buy milk from the kraal/farm or middle men and process them into yogurt, cheese (especially soft cheese called *wagashi*), ice cream, or other products. Generally, herdsmen's wives process milk.
Private wholesalers/ assemblers	Wholesaler buy milk from producers or assemblers, bulk the produce and sell it to retailers. The milk is then sold to other agents.
Collection centres/dairy cooperatives	Associations of milk producers or cattle owners facilitate the collection of milk, which they send to a collection centre for bulking and chilling.
Hawkers/vendors	Vendors collect milk from milk from producers or collectors and sell them to consumers or other market agent. They include herdsmen's wives.
Retailers	They sell milk in small quantities to consumers.
Fura seller	They are individual food and drink sellers who ply their trade mainly in urban centres. They procure their milk from kraal, assemblers, or wholesalers and sell it in combination with *fura*, which is made from cooked cereal.

Source: Adapted from Omore et al 2009.

2.4 Major dairy products

The main dairy products in the local dairy products include yoghurt and soft cheese (*wagashi*). As indicated earlier, mini processors/dairies and big processing companies produce yoghurt. The yoghurt is sold in outlets such as supermarkets, small shops, and bicycle vendors for particular brands. *Wagashi* on the other hand, is produced by artisanal processors and sold at lorry parks and other vantage points by hawkers.

Substantial interest has been generated in yoghurt processing. A big processing company holds the majority of the market share; smaller companies/businesses have been set up and aspire to capture some of the market share. Table 2.2 and figure 2.2 present a range of yoghurt brands produced in the capital city, Accra, and its environs and their prices.

Table 2. 2 Some yoghurt brand in Accra and their prices

Brand	Volume (ml)	Price (GHC)	Producer/Processors
ARI yoghurt	330	3.50	CSIR-Animal Research. Inst.
Emadom yoghurt	330	4.30	EMADOM Limited
FanMaxx	330	3.99	Farm milk Ghana Limited
Fresh farm yoghurt	700	13.30	Fresh Yoghurt and Agribusiness Limited
Nanee yoghurt	330	6.19	Nanee enterprise
Yomi yoghurt	330	6.49	EMIGOH Ghana Limited
Zeeghurt	330	4.50	CAPHZAN Enterprise
Zeno yoghurt	330	-	Zeno enterprise

Source: Market survey in Accra, Ghana, Oct 2018

Figure 2. 2 An array of locally produced yoghurt drink in Accra, Ghana

2.5 Role and place of women in dairy value chains.

In the local milk/dairy products value chain, women are typically involved in milk processing and vending of milk or processed products like *wagashi* (Omore et al., 2009). Women are virtually absent in milk production. This is because in Ghana most cattle men most cattle. Women often keep smaller stock. Additionally, herdsmen who take care of cattle and are often given milk as remuneration are normally men.

3.0 Dairy policies

3.1 Brief history of dairy projects (sectorial) or livestock projects implemented over the last two decades

Several projects have been implemented in the last two decades. These projects have mainly been targeted at livestock in general, but they have also focused on dairy to some extent. Some of these projects include the National Livestock Project (NLSP), Livestock Development Project (LDP), Pan-African Rinderpest Control (PARC) and the Heifer International dairy project.

The NLSP was implemented between 1993 and 1999 and its main objective was to increase meat, egg and milk production, to raise income of farmers, to reduce livestock and livestock products imports, and to reduce Government expenditure on the livestock sub-sector. Institutional reforms and investments were done to increase producers' access to livestock health services, improved breeding stock, improved livestock production technology and markets.

An investment activity directly targeted at dairy improvement in the country was related to the Pilot Dairy Development Scheme. A milk collection scheme was established, and activities geared towards increased milk supply were undertaken. Although, the NLSP covered the entire nation, the dairy development scheme was operated only in the Greater Accra Region in the peri-urban areas of the capital Accra, and Tema. A government dairy farm (Amrahia Dairy Farm) was rehabilitated and resourced to become the centre of the pilot dairy development scheme. For instance, Friesian cows were brought into the country for a cross breeding programme. Under the scheme, farmers were encouraged to form groups to collect and market milk. It was expected that by the end of the project, the farmer groups would take over the operation of the milk collection and marketing scheme from government (WB, 1992).

Also, forage was developed, and farmers were given technical assistance and advice to improve milk production through breed improvement, feed supplementation and good veterinary care.

The LDP was implemented soon after the NSLP to protect and extend the gains made under the latter project. The project was lasted for six years (2002 – 2008). The main goal of the LDP was to reduce poverty and improve food security. This was done through interventions in livestock production and processing. Furthermore, the project had five components: Development of Animal Production, Development of Animal Health, Credit Provision, Capacity Building, and Project Management (ADF, 2001).

Under development of animal production, breeding stations were resourced with various livestock breeds that had improved reproductive and growth performance. These high performing animals were to be used to develop improved breeds that would be sold to farmers. Also, semen was purchased for breeding dairy cows. Farmers that received improved breeds were trained in animal breeding and genetic improvement, animal husbandry, and establishment of forage plots and supplementary feeding. To promote peri-urban dairying, farmers were given Artificially Inseminated (AI) crossbreed cows for milk production. Local cattle (Sanga cows) were also artificially inseminated to produce AI dairy cows and heifers for beef. Water supply points were developed in several communities too.

Under development of animal health, activities were carried out to control major diseases like CBPP, brucellosis, and PPR. About one million animals were to be vaccinated yearly. Poultry diseases like New castle and Gumboro were also controlled by vaccinating about three million birds annually. However, farmers were made to pay towards vaccination of the animals so as to recover some of the cost.

Short-term credit was provided to livestock farmers, processors, and traders to purchase animal feed, drugs and veterinary services. Community Livestock Workers (CLW) could also take short-term credit to purchase veterinary drugs for supply to farmers. Medium term credit was available for construction of animal feed storage facilities, animal housing, livestock purchase, milk processing equipment purchase and finance of marketing activities.

Under capacity building, training was provided to producers, processors, and service providers. Training activities included farmer group formation and management, livestock and livestock products production, processing (including milk processing), and marketing.

Another major livestock project was the Pan-African Programme for the Control of Epizootics (PACE). This programme was implemented in order to consolidate the gains made in an earlier programme, The Pan-African Rinderpest Campaign (PARC) which had a main aim of eradicating rinderpest from Africa. PACE was implemented from 2000 – 2006 to provide serological data and disease surveillance for monitoring the incidence of rinderpest in PARC/PACE countries. In addition to consolidating the gains made under the PARC campaign, PACE also helped to control major epizootic diseases such as Foot and Mouth Disease (FMD) and Contagious Bovine Pleuropneumonia (CBPP) (AU, 2010; Tambi, Maina, Mukhebi, & Randolph, 1999).

Non-Governmental Organisations (NGOs) have also implemented projects to develop the dairy sub-sector. For instance, in 2007, Heifer International imported Jerseys cows into Ghana and distributed them to farmers to keep. In collaboration with the Animal Production Directorate (APD) of the Ministry of Food and Agriculture, Ghana, they trained farmers in the handling and management of the cows.

The 1000s+ project implemented by IFDC and funded by the Netherlands government also formed a fresh milk cluster with the Sege Cattle farmers Association in Sege, in the Greater Accra Region, to provide a platform for actors in the fresh milk value chain to interact and promote milk production, processing and marketing thereby improving the livelihoods of the actors involved. The CSIR-Animal Research Institute co-ordinated the platform formation and facilitated its activities (CSIR-ARI, 2011). The project was implemented between 2008 and 2012.

Under the TARGET project, the International Livestock Research Institute (ILRI) in collaboration with the Ministry of Food and Agriculture, Ghana, and the CSIR- Animal Research

Institute implemented a project aimed at improving the livelihoods of smallholder farmers through peri-urban dairy farming. This project was funded by USAID and implemented in selected countries in West Africa. In Ghana, the project was implemented in the Dangme East District and involved dairy farming, milk processing, and marketing. The project was implemented from 2003 to 2005 (Alhassan, 2004).

3.2 Dairy projects in progress or in assembly

Currently, the main agricultural project that Ghana is implementing is "Planting for Food and Jobs". This project is focused mainly on crop production and not directly targeted at livestock. The project purpose is to enhance productivity of crops of significance for food and feed through integrated services on farming and marketing. It is expected that maize and soybean cultivation under the project will lead to output that will more than cover the requirements of humans and thus lead to increase in maize and soybean supply for feed production. The feed will be used mainly in poultry production, but it could also be channelled into more intensive production of pigs and cattle and small ruminants. This project is to be implemented between 2017 and 2020 (MOFA, 2017b).

As a result of periodic clashes between cattle herdsmen and crop farmers, sometimes with fatalities and destruction of property, the country seeks to promote cattle ranching. Consequently, a committee "Ghana Cattle Ranching Project" committee has been set up to find solutions to the farmer-herder conflicts (GoG). Some of the proposed solutions are the rehabilitation of existing fodder banks to produce feed for grazing and dry season feeding. The private sector is to be encouraged to go into commercial pasture production, conservation and sale to livestock farmers. A bill is to be prepared to give legal backing to adoption cattle ranching. The bill will subsequently be passed into law.

3.3 Fiscal and commercial policy /dairy products: Import taxation, taxation of local products, rules and standards in force

Actors in the milk/dairy products value chain are subject to taxation, rules and standards. The main taxes are the value added tax, VAT, (12.5%), National Health Insurance Levy, NHIL, (2.5%), and Education Trust Fund Levy. However, some goods are exempt from these taxes.

Generally, animal products in their raw state produced in Ghana are not liable to VAT and NHIL. Processing beyond salting, smoking, freezing, and other simple methods of preservation make a product liable to VAT (GRA 2018). The Food and Drugs Authority (FDA), Ghana, is the regulatory body mandated to ensure food safety in the country. To carry out this mandate the FDA has guidelines on food evaluation and registration, food enforcement, food safety management, and animal products and biosafety among others. Food processors and manufacturers are required to adhere to the guidelines (FDA, 2018).

Milk and dairy products importers are also expected to register their products with the FDA before the goods are imported into the country. Imported milk and dairy products attract both import duty, VAT and NHIL. Import duty rates range from 5 percent (5%) to 35 percent (35%) depending on the type of product (Table 3.1).

Table 3. 1 Import duty and tax rates for imported dairy products

Heading	Description	Import duty (%)	VAT (%)	NHIL (%)	Unit	Product name
0401	Milk and cream, not concentrated nor containing sugar or other sweetening matter	20	12.5	2.5	Kg	Evaporated milk
0402	Milk and cream, concentrated or containing added sugar or other sweetening	5, 10, 20	12.5	2.5	Kg	Milk powder and cream powder
0403	Buttermilk, curdled milk and cream, yoghurt, kephir and other fermented or acidified milk and cream, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	35, 5, 10, 20	12.5	2.5	Kg	Fermented milks (Yoghurt, alternate culture yoghurt, kefir, kumys)
0404	Whey, whether or not concentrated or containing added sugar or other sweetening matter; products consisting of natural milk constituent, whether or not containing added sugar or other sweetening matter, not elsewhere specified or included	5, 20	12.5	2.5	Kg	Whey powder
0405	Butter and other fats and oils derived from milk; dairy spreads.	5, 20	12.5	2.5	Kg	Dairy fat spreads, cream and prepared cream
0406	Cheese and curd	20	12.5	2.5	Kg	

Source: (GRA, 2018)

3.4 Future and scope of the dairy sector for the country

The future of the dairy sector could be gleaned from policies targeted at the livestock sub-sector and projects and programmes that are currently running or will start in the near future. The current Ghana livestock policy and strategy has two main goals (MOFA, 2016):

1. To enhance the supply of meat, livestock and dairy products from domestic sources, innovation, generation and utilisation, capacity and entrepreneurship skills of livestock value chain actors.
2. To enhance access to livestock markets, services and value addition.

Several issues were identified, and policy guidelines have been formulated to deal with breed improvement, animal nutrition, animal health, land for livestock production, market and processing facilities, product safety, research and research funding, and laws regulating the

livestock sector. Some of the policy guidelines, which could directly or indirectly impact the dairy sector, are as follows:

- Promote breeding stock improvement.
- Provide improved breeding stock to farmers.
- Train livestock breeders.
- Establish breeding stations.
- Make high quality veterinary pharmaceuticals, biological and probiotics available.
- Conserve indigenous breeds
- Encourage the establishment of grazing lands
- Zone land for livestock production
- Increase stock water availability
- Register establishments that keep livestock temporarily or permanently
- Establish animal identification and traceability systems
- Establish artificial insemination centres
- Promote the practice of artificial insemination
- Promote the establishment of markets, slaughter houses and processing plants
- Promote production and safety of livestock products
- Build capacity of actors to add value to livestock products.
- Promote and fund livestock research.
- Update laws regulating the livestock sub-sector.
- Promote regular and timely collection of livestock data.

The current actions and pronouncements by government to promote cattle ranching will most probably extend into the future. This is likely to change the system of production to some extent. Livestock production will become more intensive relying on supplementary feed.

4.0 Conclusions

Cattle production in Ghana contributes quite significantly to the economy of Ghana through both meat and milk production. Although, milk production is not the major goal of cattle production in Ghana, the volumes that are produced in the country are still significant. Two distinct value chains for milk and dairy products can be identified. These are the value chains based on locally produced fresh milk and that based on imported milk. There are various actors in each value chain with women playing key roles in milk sales and processing in the local milk and dairy products value chain. The bulk of milk and milk products consumed in Ghana are imported or produced using imported milk. Dry skimmed milk is the most important dairy product import both by volume and value.

Several projects targeted at milk production, marketing and processing have been implemented in the past. Currently, there are few of such projects going on. It is not clear if projects are being prepared for implementation in the near future. Nevertheless, the Ghana Livestock Development Policy and Strategy document provides some ideas regarding the future direction of the Livestock sub-sector and therefore the dairy sector. What is not certain is whether the required funding will be made available to implement the policies and strategies. The current drive by government to promote cattle ranching and enact a law for all cattle farmers to have ranches is likely to continue into the foreseeable future.

It is clear that the local/traditional dairy industry in Ghana is quite undeveloped and small. On the other hand, the portion of the dairy industry/sector that thrives on imported milk and milk products will continue to grow for a long time, unless major steps are taken to promote the indigenous dairy industry. These steps could include improving milk production and organised milk collection from farms, and linking milk producers to markets.

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