

Geographical Indication Protection of

Mozambique's Cabrito de Tete (Tete Goat)



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1

INTRODUCTION

GEOGRAPHICAL INDICATION PROTECTION OF MOZAMBIQUE'S CABRITO DE TETE (TETE GOAT)

It is widely recognized that the livestock sector in developing countries contributes to poverty reduction and promotes agricultural development and a means of achieving sustainable livelihoods. Therefore, the livestock sector stimulates the contribution of rural households and plays a key role in human livelihoods and nutrition, which further improves human health and well-being (FAO, 2018). Thus, contributing towards the achievement of UN Sustainable Development Goals (UNCTAD, 2018). The Food and Agricultural Organisation (FAO) estimates that livestock contributes around 40 percent of agricultural gross domestic product globally, providing one-third of humanity's protein intake and supporting the livelihoods of a large section of the population (World Bank, 2009; FAO, 2006).

The African continent represents about two-thirds of the world's livestock population with diverse categories of animals (Panel, 2020). Many countries in the continent practise several forms of livestock production. The report estimates 2 billion poultry birds, 438 million goats, 384 million sheep, 40.5 million pigs, 31 million camels, 38 million equines, 6.5 million horses, and 885,000 mules (FAOSTAT 2019; Panel, 2020).

Given its large natural and agricultural resources, Mozambique's rural economy is dependent on livestock keeping. In particular, the traditional family farming practice of breeding cattle, pigs, goats, and poultry is prevalent in different parts of Mozambique (Vernooij, Anjos, and Mierlo, 2016). It is estimated that around 89% of total households in Mozambique are actively involved in agriculture, livestock, fisheries, or forestry, of which 55% of households are dependent on agriculture and livestock as their main source of revenue (FAO, 2016). The African Development Bank Group's Country Strategy Paper 2018-22 for Mozambique estimated a 10% increase in livestock by 2022. However, the impact of tropical storms has not only resulted in livestock losses but also losses in cereal production, though that is expected to improve this year (FAO, 2022).

Mozambique's goat-keeping practices are traditionally rooted in a rural community, with some 5 million goats out of which smallholder farmers keep the majority (Mataveia *et. al.*, 2018; INE, 2014). In recent times, Mozambique has faced several local bottlenecks in goat production, including disease outbreaks. Therefore, it is important to improve production capacity, minimize risk, and ensure the quality of meat products.

Mozambique's goat sector has considerable potential for improving food security and uplifting rural communities. It is estimated that an improvement in Mozambique's goat sector has the potential to provide an additional annual income of US\$50 million nationally (Tui Homann-Kee *et. al.*, 2016). One way to maximize quality assurance and increase price premiums for exports is through protection of geographical indication because of the link between the territory and the uniqueness of a product.

The **United Nations Conference on Trade and Development (UNCTAD)** is a key player in providing technical support and offering policy advice to least-developed countries (LDCs), such as Mozambique. For more than a decade, the organization has provided technical assistance and guidance as to the prospects of geographical indications (UNCTAD; 2016).

Geographical Indication (GI) is a sign used on products that have a specific geographical origin and possess qualities, reputation, or characteristics that are essentially attributable to that origin (WIPO, 2021), therefore it become relevant to least developed countries to promote local products in international markets (Upreti, 2023).

To this end, UNCTAD's engagement with the Mozambique Institute for Intellectual Property Rights Office in promoting GI protection with stakeholders and other interest groups has initiated a discussion on using GI as a tool to facilitate rural development. The recent successful geographical

CHAPTER 1: INTRODUCTION

indication protection of *Cabrito de Tete* by the African Union is a result of this discourse (AFrIPI, 2020). The *Cabrito de Tete* is a locally bred goat from the Tete province of Mozambique.

This report develops and locates previous technical support that UNCTAD has provided to Mozambique on GI and related development issues. It further draws on the recent UNCTAD publication entitled “**The Case for Geographical Indication Protection of the Mozambique White Prawn**” (UNCTAD, 2022), which details the legal framework and rural development potential of GI in Mozambique.

The purpose of this report is to provide an understanding of:

1. The nature, characteristics and identification of Mozambique’s *Cabrito de Tete*;
2. Identify the challenges and issues concerning maintaining the status quo of GI protection for *Cabrito de Tete*.

While appraising the issues, the study is primarily focused on telling the story of the first registered African Regional Intellectual Property Organisation (AIPRO) – ***Cabrito de Tete***.

2

THE CONTRIBUTION OF GOATS IN RURAL MOZAMBIQUE

GEOGRAPHICAL INDICATION PROTECTION OF MOZAMBIQUE'S CABRITO DE TETE (TETE GOAT)

The contribution of goats to rural communities is mainly for (i) food security, which includes direct consumption of meat; (ii) resilience to shocks; using goats as insurance and savings; (iii) income generation from the sale of meat, skins, and the like, (iv) the social and cultural connections, where goats are used in religious ceremonies, weddings, births and other social events. (FAO, 2012; CGIAR 2015).

The goat, with its climatic and nutritional adaptability, produces meat of universal acceptability, thus presenting itself as a protein food source with great potential to be explored. This potential is justified by the fact that goats, among domestic animals, have the greatest ability to survive in many of the most inhospitable regions of the world, mainly due to their resistance to heat (Madruga *et. al.* 1999). The literature presents five reasons to justify the great tolerance to heat presented by goats (Norman 1985; Sejian *et al.*, 2021):

- a. Resistance to heat absorption through goat hide;
- b. Ability to ingest large amounts of food, with consequent production of metabolizable water;
- c. Small but significant ability to store heat;
- d. Ability to reduce water loss through faeces and urine, by osmotic concentrations; and
- e. Ability to store fat internally, around the viscera.

It is also important to note that the low nutritional requirements of goats allow them to feed on vegetation that is unsuitable for sustaining larger animals. For these reasons, the great value of goats as meat producers is much more associated with their ability to grow and produce meat in conditions that are too stressful for most animals, rather than their ability to produce good quality meat in terms of yield.

It is well noted that the goats are mainly concentrated in Asia and Africa combining up to 93.4% of the total number in the world (FAOSTAT, 2018; Lohani and Bhandari, 2021). Therefore, it is natural that most rural communities in Asia and Africa are dependent on goats as meat providers, and thus make use of all parts of the animal, regardless of quality. With regard to difficulties in accessing markets for products from the family sector, these stem much more from meat providers' inability to meet the requirements of quality and regularity of supply than from the nature of organization of production. Improving the level of organization and emphasizing training in management of the productive unit are the instruments of action that should be employed to reduce or eliminate these deficiencies (Filho, 2011).

Regarding goat meat, the iron and phosphorus content, together with its high protein content and low-fat content confirm its high quality and nutritional value. However, animals raised in pastures including extensive rearing system have different characteristics from those reared in an intensive system (confinement), with balanced diets, the same occurring with the breed and age at slaughter, with goats of breeds for meat showing higher weights at slaughter. Therefore, there is a growing interest in goat meat due to its dietary properties, as it has low levels of cholesterol, saturated fat and calories, when compared to other red meats (beef, pork, lamb) (Duarte, 2005; Boogaard and Moyo, 2015).

There is a strong relationship between goats and Mozambican society. Socio-economic factors influence household decision-making in viewing the function of goats. Given Mozambique's rural communities are dependent on goats for consumption and livelihood, therefore, the function of the goat can be constructed as a social and economic need of Mozambican society.

CHAPTER 2: THE CONTRIBUTION OF GOATS IN RURAL MOZAMBIQUE

Tete, the western-most province of Mozambique, is uniquely situated in terms of production of livestock which is largely supplied to other provinces in Mozambique. It is estimated that Tete province contains 15 percent of the total goat population of Mozambique (ICRISAT, 2016). Therefore, increasing consumption of goat meat due to its high nutritional value as a good source of protein and minerals as well as its acceptability and popularity is duly exploited by goat breeders in the family sector in the southern part of Tete Province. Therefore, creating linkage and co-ordination between the actors involved in goat production and the market would result in higher income for rural communities that are primarily dependent on goat-keeping. Thus, there is a strong economic incentive for goat farming because of the abundant supply of goats in Tete province, which in turn offers a strong return on investment.

3

THE CABRITO DE TETE:
THE MAKING
OF GEOGRAPHICAL
INDICATION PROTECTION

3.1 PRODUCT DESCRIPTION

Tete Goat are reared in the Tete Province. They belong to the species *Capra aegagrus* or *Capra hircus* and are reared in extensive systems. This section will provide a holistic overview of the Tete goat meat.

Taxonomy

The Scientific Classification of Goats is as follows:

- **Kingdom:** Animalia;
- **Phylum:** Chordata;
- **Class:** Mammalia;
- **Order:** Artiodactyla;
- **Family:** Bovidae;
- **Subfamily:** Caprinae Genus: Capra;
- **Species:** *C. aegagrus*;
- **Subspecies:** *C. a. hircus*;
- **Trinomial Name:** *capra aegagrus hircus*.

Categories (Classes) of Goats

- **Young:** Animals of both sexes from birth to weaning at around 3 months of age;
- **Whiplashes:** Females from weaning until they enter reproductive life at about 1 year of age;
- **Whips:** Males from weaning until they enter reproductive life at about 1 year old;
- **Goats:** Females of reproductive age over 9 months;
- **Goats:** Males of reproductive age over 9 months.

3.1.1 Nature of Product

Animals to be slaughtered by the sticking method¹ are left on a water diet for 24 hours before slaughter in the slaughterhouse corral. After slaughter, they are bled skinned and eviscerated, and the carcasses are kept weighted at room temperature for 5-6 hours, before being slowly chilled in a cold room at 0°C - 2°C for 24 hours, so that the internal muscular masses reach a temperature of 7° C, before packing the pieces.

3.1.2 Classification/Categories and Types of Tete Goat Meat

Carcasses, quarters of carcasses (front or rear), parts packed in a vacuum or in a controlled atmosphere, refrigerated or frozen, are obtained from animals of the local breed called Landim, according to the identification of the local breeds of goats in Tete, under the following conditions:

- **Goat Meat:** carcasses or parts from slaughtered animals weighing up to 10 kg;
- **Young Animal Meat:** carcasses or parts from slaughtered animals weighing from 10 kg and not exceeding 20 kg;
- **Old Animal Meat:** carcasses or parts from slaughtered animals weighing more than 20 kg.

Three types of goat meat are produced and consumed in the tropics. These are as follows: (Devendra & Owen (1983) Madruga (1999))

- **“Goat” meat:** consumed in Latin America and/or Western India; usually the animals are slaughtered at the age of 8–12 weeks, weighing 6 to 8 kg;
- **Meat from young animals:** this period is the most important age for meat production, when the animals are between 1 and 2 years old, weighing from 12.9 to 24.7 kg (males) and 11.2 to 19.7 kg (females), these animals are slaughtered in some places in Africa, the Middle East and Southeast Asia;
- **Meat from old animals:** when the animals are past their peak production, and are aged 2 – 6 years, weighing 20 to 30 kg; these can be animals raised for meat, milk or leather; the meat is tougher and less acceptable, and is mainly consumed in African countries.

¹ A sticking method is a form of slaughtering method where an animal's neck is cut by a sharp instrument to sever the major blood vessels in its neck and chest ensuring bleeding, resulting in death.

Classification of the goat carcass can also be based on visual evaluation and measurement of the carcass characteristics. Therefore, the following terminology is also used regarding:

Sex

- **Goat:** male (not castrated);
- **Goat:** female;
- **Kid:** male castrated before developing secondary sexual characteristics.

Maturity

- **New Animal:** 14 months old or younger;
- **Young Animal:** first pair of permanent incisors from 14 to 24 months old;
- **Adult Animal:** 2 pairs or more of permanent incisors, over 24 months old.

Figure 1 Carcasses of goats slaughtered at the Municipal Slaughterhouse in the City of Tete and already inspected by the Veterinarian



Fat should be firm, non-exudative and of a variable colour from white to yellow. Meat colour can vary between light red and dark red:

Goat meat can also be from the following Classes

- T-post;
- 1st With Bone;
- 2nd With Bone;
- fillet;
- steak;
- stew.

Figure 2 Carcasses of goats slaughtered at the Municipal Slaughterhouse of the City of Tete, highlighting the characteristic colour of goat meat



3.2 CARCASS AND GOAT MEAT CHARACTERISTICS

The nutritional quality of goat meat is an advantage because it has less fat, lower cholesterol and fewer calories compared to other meats. The establishment of an organic goat production further ensures low cholesterol, in addition to tenderness and juiciness, new qualities related to the way these animals are raised, associated with natural pasture, the use of special and standardized meat cuts and strict hygienic-sanitary control in production, processing and distribution (Madruga *et. al.*, 1999).

A commentator asserts that because goats are small animals, the carcass appears as small, thin and not very compact, but it has been observed that it increases, becoming compact as weight gain occurs (Madruga *et. al.*, 1999). Glimp (1995) reported that when compared to other domestic animals, goats generally have low carcass production, but with a high meat and low-fat content, and that according to Wilkinson & Stark (1987), the yield of goat carcasses, in relation to meat/muscle, is generally in the range of 45 to 52% of the live animal weight, and may even reach rates of 66 to 68%. These yield rates result from the fact that the development of fat in the goat carcass occurs very late, not reaching appreciable levels until the animal's weight reaches 40 kg or more (Madruga *et. al.*, 1999). Several studies have presented goat meat as characteristically low-fat meat. Therefore, there is a clear opportunity to explore this factor in areas where the population is eager to reduce consumption of dietary fat (Madruga *et. al.*, 1999).

3.2.1 Nutritional Characteristics

To determine nutritional characteristics, two samples were taken, one of male goat meat from a 9 kg carcass, and the other of meat from a young male animal with a 16 kg carcass after slaughter, bleeding, evisceration, weighing and inspection in the Municipal Slaughterhouse of the City of Tete, operated by CARNES DO ZAMBEZE, a private company. The hindquarters and forequarters of the animals were collected, kept on ice and transported to Maputo City and delivered to the National Food and Water Hygiene Laboratory (LNHAA) of the Ministry of Health (MISAU), a reference laboratory in Mozambique, to carry out chemical analyses. Below are the results of the laboratory analysis, i.e., the chemical composition of Tete goat meat:

Study suggests that the age at slaughter significantly influences the moisture content, proteins, calcium, iron and the sensory attributes analysed, observing that the protein and iron content increase with age at slaughter (Madruga *et al.*, 1999). On the similar line, other also concluded in his study that the chemical composition of the goat meat studied showed little variability in the genetic groups studied, and that the three genetic groups studied showed different behaviours for the accumulation of Minerals (Ca, P, Mg, Na, K and Fe) in muscle tissue (Beserra 2000). On the other hand, the values found, with the exception of iron and fat content, are similar to animals of different breeds originating from different continents.

The chemical composition of the two samples of kid goat meat from Tete analysed also shows that moisture, ash, iron, sodium and carbohydrates increased with age at slaughter while protein and fat decreased. However, the limited number of samples analysed (only two) is not enough to draw conclusions, and for this purpose, more samples must be analysed. However, the results found in the two samples are in some way in accordance with the results of the studies cited above, which is an indication of the good nutritional quality of meat from de Cabrito de Tete since it is within acceptable standards.

Tete goat meat: Goat

Moisture (%w/w) – 65.14
 Protein (%w/w Nx6.25) – 73.44
 Fat (%w/w) – 8.58
 Iron (mg/100g) – 6.33
 Phosphorus (%w/w) – 0.59
 Sodium (mg/100g) – 90.66
 Carbohydrates (%w/w) – 14.44
 Energy (Cal/100g) – 425.13
 Calcium (%w/w) – NA
 NA - Not Determined
 %w/w = g/100g

Tete goat meat: Young Animal

Moisture (%w/w) – 68.69 Ash
 Protein (%w/w Nx6.25) – 46.51
 Fat (%w/w) – 5.00
 Iron (mg/100g) – 16.29
 Phosphorus (%w/w) – 0.60
 Sodium (mg/100g) – 95.01
 Carbohydrates (%w/w) – 44.32
 Energy (Cal/100g) – 397.24
 Calcium (%w/w) – NA
 NA - Not Determined

3.2.2 Organoleptic Characteristics

The analysis of the Organoleptic Characteristics carried out by the National Food and Water Hygiene Laboratory (LNHAA) of the Mozambican Ministry of Health (MISAU) concluded that the two samples of goat meat from Tete, one from a kid (carcass weight of 9 kg) and another from a young (16 kg carcass weight) had a normal consistency and a normal content appearance.

3.2.3 Microbiological Characteristics

Analysis of the microbiological characteristics also carried out by the MISAU LNHAA concluded that the two samples of goat meat from Tete were not contaminated with *Salmonella* spp., indicating that the meat was suitable for human consumption.

3.3 ACCEPTABILITY OF GOAT MEAT: SENSORY ASPECTS OF FLAVOUR, TEXTURE, AROMA

Several factors affect the taste and aroma (“flavour”) of goat meat. In research using sensory panelists in the analysis of goat meat, one of the most constant observations has been the lack of flavour often associated with a lack of tenderness and juiciness, leading to an overall unfavourable impression of this product. It is reported that goat meat from young animals was juicier than that from older animals (Sautier 2017; Madruga et al., 1999). Furthermore, studies suggest that meat from young goats had preference in the sensory panel, since it was softer, juicier and had better flavour (aroma and taste)

(Kirton, 1970 and Smith et al., 1978). The data on carcass yield, physical-chemical and sensory characterization of goat meat are well documented in the literature. However, there is a great lack of technical/scientific information involving the aspect of instrumental analysis of the characteristic aroma of goats (Madruga et al., 1999).

In the case of goat meat from Tete, it is essential to have a sensory aspect of the meat to promote its acceptability and popularity. Goat breeders, consumers of goat meat and other stakeholders interviewed in the places visited in Tete Province mentioned that goat meat from Tete is juicy and sweet, and that it is very popular and appreciated for its flavour, but it is essential to link this aspect, for example, with the natural pasture consisting mainly of sweet pastures, or with malambe and massanica (see 3.4), in the semi-arid and arid regions of the province.

3.4 PERMITTED RAW MATERIALS FOR ANIMAL FEED

- Spontaneous natural pastures
- Agricultural by-products (straw, stubble)
- Leaves and Fruits of Baobab (Malambe) and Massaniqueira (Massanica)

3.5 DELIMITATION AND CHARACTERISTICS OF THE GEOGRAPHICAL AREA

In the centre of Mozambique lies the Province of Tete, which is located in the extreme northwest of the country, and bordering with 3 (three) countries to a total length of 1480Kms, namely with the Republic of Malawi 610 Kms, with the Republic of Zambia 420 Kms and with the Republic of Zimbabwe 450Kms. Zambia and Malawi lie to the north, Malawi to the east, Zambia and Zimbabwe to the west and south with Zimbabwe and three Mozambican provinces, Zambézia to the east, Manica and Sofala to the south and between coordinates 14°00'S and 17°42'01"S and 30°13' E and 35°20'07"E.

Figure 3 Map of the Province of Tete, indicating the districts of goat distribution in the south of the province



Source: Dr. Alsácia Atanásio.

Geographical boundaries of Tete Province

North - Latitude 14°00'S.

East - Longitude 35°20'07"E.

West - Longitude 30°13'00"E.

South - Latitude 17°42'01"S.

Surface and Administrative Division

The total area is 100,742 km², of which 98,230 km² are on land and 2494 km² are inland waters. This is the 3rd largest in the country after the provinces of Niassa and Zambézia.

The Capital of the Province, the City of Tete, has 13 Districts - including the City of Tete, which are: In the region north of the Zambezi River: Angónia, Moatize, Mutarara, Tsangano, Zumbu, Chifunde, Chiúta, Macanga, Maravia, and in the region south of the Zambezi River: Cahora-Bassa, Changara, Mágoè and Tete City.

It has 34 administrative posts, 124 locations and 03 municipalities (City of Tete, Vilas de Moatize and Ulónguè)

The districts of Macanga, Tsangano and Angónia are located at altitudes above 1000 meters, Changara and Mágoè at altitudes below 200m and the rest between 200 and 1000m.

The highest point is Mount Dómuè (2093m) in the District of Angónia, where rainfall varies between 400 and 1000mm.

The Southern Region of Tete has a dry tropical climate and rainfall varies between 600-800 mm.

The north and parts of Zumbu and Chiúta have a tropical highland climate, rainfall varies between 800-1000mm and over 1000mm in the districts of Macanga, Angónia, Tsangano and northern Maravia.

A west-east strip from Chiúta to Moatize has a humid tropical climate.

Climate, Relief and Flora

Climate

Three types of climate can be identified in Tete Province:

The Dry Tropical Climate

This occupies a small strip to the left of the Zambezi River and the entire region to the right, except for a small strip in the district of Mutarara, which has a humid tropical climate, with maximum annual average temperatures of around 32°C and a maximum rainfall of 180 mm.

The Humid Tropical Climate

Occupying an elongated east-west strip within the northern region of Tete.

Climate Modified by Altitude

From the Aruângua (Zumbo) river to the Tsangano district caused by the Maravia-Angónia plateaus with maximum annual average temperatures of around 26°C and with an average maximum precipitation of approximately 360 mm.

The average monthly temperature in the hottest months – October, November, December, January and February – is around 28 to 29°C and in the coldest months, June and July, 22°C.

Relief

The relief of Tete is subdivided into two very distinct parts. In the north of the province the formation of the plateaus of Maravia-Angónia and in the south, the plain of the Zambezi valley, which has some mountain formations whose altitudes are lower in relation to the northern zone, where the highest points are located, Mounts Dómuè and Chiróbue with 2096 and 2021 meters respectively.

Flora

In the north of the province, Miombo Open Forest, Arboreal and shrubby Savannah and herbaceous and arboreal Savannah predominate.

The main wood types of the province are: Chanfuta, Umbila, Miombo, Mopane, Pau Preto, Ntumbue, Mbana, Micaias and Ntondo. For energy purposes, Mopane and Micaias are used.

The northern zone, comprising the districts of Angónia, Macanga, Marávia, Zumbu and Chifunde with atmospheric precipitation in the order of 800 and 1200 mm, is the most productive zone from an agricultural point of view and is densely populated.

The southern zone comprises the Districts of Changara, Mágoè, Cahora-Bassa, Moatize, Mutarara, Chiúta and the City of Tete, whose annual atmospheric precipitation is around 600 mm and is the poorest in the agricultural field in relation to the northern zone, because it produces only enough for self-consumption.

3.6 GEOGRAPHICAL AREA OF TETE GOAT DISTRIBUTION

The local goat breed is found on small farms in the family sector, mostly located in the southern region of Tete Province and in some neighbouring regions where identical edapho-climatic conditions are verified, according to the map and list of Districts in Annex I of this report, of which it forms an integral part.

The agro-climatic conditions are markedly arid and semi-arid, with very hot and rainy summers, where maximum monthly average temperatures can reach 35.1°C in December, with the lowest of around 22.7 in July, and cool and dry winters. with average monthly minimum temperatures of 6.4 in July to 29.8 in January. Total monthly precipitation varies between zero, from July to October, and 269.5 mm in January, with a total annual precipitation of around 600 mm, and monthly average Relative Humidity ranging from 46% in August to 86% in February.

Figure 4 Goats on natural pasture in the dry season in Cahora Bassa (end of April), and in good body condition, you can see the standing hay and the Acacia spp bush, very green



Figure 5 An area of Marara, Changara, highlighting the *Adansonia digitata* (baobab tree) whose leaves and fruits are the main and preferred food for goats during the dry season in arid and semi-arid areas of southern Tete Province



In Angónia, for example, an area with a humid tropical climate, in the north of Tete Province, the summers are mild and rainy, where the maximum monthly average temperatures can reach 30°C in January, with the lowest of around 21.3 in June /July, and cold, dry winters, with average monthly minimum temperatures of 7.2 in June/July to 17.6 in November to January. Total monthly precipitation varies between 0 in June and 381.3 mm in January/February, with total annual precipitation of around 930.9 mm, and monthly average Relative Humidity which varies between 48% in September and 89% in February/March.

Spontaneous natural vegetation or grasslands consist mainly of xerophytic communities with *Combretum spp.*, *Colophospermum mopane*, *Adansonia digitata* (baobab), *Heteropogon contortus*, *Aristida spp.* and *Acacia spp.* Other components occur such as *Ficus spp.*, *Cardiogyne africana*, *Pterocarpus brenanii*, *Bauhinia fassoglensis* and *Ziziphus abyssinica* (locally known as “Massaniqueira”) according to Myre (1966) & Lousã (1973), cited by Atanásio (2000). The fruits and leaves of massaniqueira and baobab are commonly consumed by goats and cattle during the dry season.

It should be noted that the geographical area is delimited:

- to the west, by the border with Zambia and Zimbabwe;
- to the north, by the Districts of Tsangano, Maravia and Zumbo;
- to the east, by Malawi and the Province of Zambézia;
- to the south by the border with the Provinces of Manica and Sofala, in whose territory both the soil and climate conditions in which the local goat breed is raised by breeders of the family goat sector, and the respective feeding and management are different from those practised in the interior and northern regions of Tete Province, with their **Humid Tropical Climate and Altitude Modified Climate, respectively, giving rise to naturally differentiated products.**

Therefore, and taking into account:

- The distribution of the arid and semi-arid region;
- The geographical distribution of the local goat breed;
- The location of family sector breeders who can, as a result, practise the required breeding and management regime (extensive system);
- The know-how of the populations associated with local, loyal and constant methods, namely in raising and managing animals;
- The legal rules for slaughtering, cutting and obtaining carcasses, parts and preparation of goat meat in general;
- The general control and traceability requirements imposed on goat meat in general,
- The absolute need to demonstrate the geographical and animal origin of each piece or each package, individually marked and numbered, to guarantee that control does not present continuity problems;
- The need to provide the consumer with a genuine and reliable product, even after preparation that adapts it to the modern requirements of consumption and distribution.

The geographical area of birth, rearing and fattening of animals, slaughter, obtaining carcasses and quartering, cutting and slicing into larger or smaller pieces, including fine cutting, the preparation of certain pieces into minced and prepared products and packaging of pieces and chopped and prepared products is naturally limited to:

- All Districts of Tete Province located in the Region where the Dry Tropical Climate predominates (Arid and Semi-Arid Climate Conditions), namely: Tete, Moatize, Chiúta, Changara and Cahora Bassa.

While, for circumstantial reasons, there is no preparation/freezing structure in the region delimited above that can fully respond to the high hygienic and qualitative requirements imposed by the PDO managing group “CARNES DO ZAMBEZE”, certain preparation can be carried out (is tolerated) outside the geographical area, provided that:

- The pieces leave the geographical area duly and unitarily identified and labelled, with the accompanying documents provided for in the general law and in the particular control system instituted;
- Transport is carried out in vehicles that ensure maintenance of the cold chain, at the temperatures required by legislation in force and over a distance of no more than 500 km in order to ensure not only the good quality of the meat but also the feasibility of control;
- The preparation structure guarantees the proper spatial and temporal conditions for processing “CARNES DO ZAMBEZE” ABC pieces, without any possibility of contact, mixing or confusion with other products;
- The entire preparation process is monitored in person by a technician from the Provincial Livestock Services Inspectorate (SPP) who personally monitors all operations, including non-compliance of the original packaging of each piece, preparation and re-packaging and proceeds with the affixing of new certification marks;
- The entire process is duly registered, making it possible to completely trace the entire operation, guaranteeing the origin and quantities of “CARNE DO ZAMBEZE”.

3.7 GUARANTEE OF GEOGRAPHICAL ORIGIN OF THE PRODUCT

All goat breeders in the family sector are located within the geographical area referred to in 3.6

The system for registering animals and transporting goats by the District Services for Economic Activities in the districts located in the delimited area and by the Provincial Livestock Services, and the control system setup, ensure that meat is obtained only from animals originating in the geographical area concerned.

All breeders and slaughterhouses undertake, in writing, to slaughter animals only from the delimited geographical area.

This system is based on the following elements:

- a. Farms located in the delimited area, subject to control by the veterinary authorities, in particular in aspects relating to identification of animals by earrings, registration of animals and control of their transport from the area of origin to the places of sale, slaughter and cutting.
- b. Monitoring the movement of animals, if they transit between authorized farms and carrying out the respective exit and entry records.
- c. Slaughter carried out exclusively in authorized slaughterhouses, in the presence of the OPC or one of its agents. The earrings are removed from the carcasses and the respective discharge is carried out in a specific form.
- d. Carcasses are immediately identified. It is therefore possible to make a connection between this identification number and the identifying earring of each goat.
- e. The number of each carcass is registered upon arrival at the preparation unit, duly authorized and subject to control by the OPC.
- f. The half-carcasses and carcass quarters are duly identified, thus making it possible to trace each piece back to the animal from which it originated and the farm where it was bred and/or where it was born or the region where it came from.
- g. The pieces and sliced products undergo this operation only in authorized and controlled facilities. In addition to the obligatory labelling, each sales unit contains either slices or pieces, and a numbered certification mark is placed on each carcass or quarter of a carcass. Therefore, it is possible to trace each piece back to the animal from which it originated and to the farm where it was bred and/or born or the region where it comes from.
- h. The minced and prepared pieces are obtained in authorized units and are subject to control. All these operations are recorded on specific forms, which allow complete traceability of the process, total control over the quantities produced, chopped or prepared, always packaged in sales units bearing the certification mark.

Therefore, there are guarantees about the geographic origin of the products.

3.8 DESCRIPTION OF METHOD OF OBTAINING PRODUCT

Meat is obtained from goats of the local Landim breed, from family sector breeders in the southern region of Tete Province.

(a) Identification of animals

The animals must carry the official identification earring and have the individual booklet duly updated.

(b) Sanitation and Veterinary Assistance

Producers must be sanitized by the Livestock Services in the exploration area or, in the absence of these, by the Livestock Delegates of the District Services of Economic Activities.

Sick animals can only be treated by the farm's assistant veterinarian, who must report the occurrence, as well as the prescribed treatment in the Medication Log Book.

(c) Production System

Goats have to be raised extensively, in accordance with traditional practices of the region, and fed on natural pastures, standing hay, stubble and straw.

(d) Products

Goat Meat carcasses or parts from slaughtered animals weighing up to 10 kg.

Young Animal Meat: carcass or parts from animals slaughtered weighing from 10 kg but must not exceed 20 kg.

Meat of Old Animals: carcasses or parts from slaughtered animals weighing more than 20 kg

(e) Food and Supplementation

Animals should be fed on natural pastures and can be supplemented with blocks of mineral salts during the dry season if necessary.

(f) Prohibited substances

Strict control must be carried out over the use of prohibited substances, whether applied directly to animals or administered through their diet, taking into account the legislation in force. The use of concentrates for animal feed is also prohibited.

(g) Transport of animals

Transport of live animals can only be carried out in suitable means of transport, respecting the legislation in force and the rules on animal welfare.

(h) Slaughtering Locations

Animals can only be slaughtered and cut up in slaughterhouses authorized by the Veterinary Services and that have an approval number in accordance with the legislation in force. Within these, priority will be given to use of the Municipal Slaughterhouse of the City of Tete in view of its location and the special conditions relating to slaughter, marketing and distribution of products.

(i) Slaughter

Slaughter of medicated animals can only be carried out after the appropriate safety period has been respected for the disposal of residues of prescribed drugs, in accordance with the Veterinarian's report contained in the Medication Registration Log.

(j) Registration

Carcasses will be refrigerated slowly at 0° C – 2° C, for 24 hours, so that the internal muscular masses reach a temperature of 7° C, before packing the pieces.

(k) Maturation

Maturation of the carcasses at 1° C – 2° C lasts at least 3 days, (optimal 7 days), from the date of slaughter until sale to the consumer.

(l) Freezing

Freezing of carcasses is prohibited except for quick freezing and in the region of origin, of packed parts, minced meat and preparations, duly labelled.

(m) Hygiene and Sanitary

The hygienic and sanitary standards in force must be compulsorily respected, in accordance with the legislation in force. Carcasses must be subject to health inspection by a veterinarian or livestock technician authorized for the purpose.

(n) Disqualification

Carcasses and products obtained from carcasses that:

- do not obey any of the established parameters;
- have been harmed during the process of slaughter, bleeding, evisceration, refrigeration, cutting and maturation;
- have been obtained from animals whose origin or conditions of feeding, handling, transport, among others, do not meet any of the conditions set out in this regulation.

4

WAY FORWARD

GEOGRAPHICAL INDICATION PROTECTION OF MOZAMBIQUE'S CABRITO DE TETE (TETE GOAT)

The rise of Tete goat meat in the regional African market through GI registration assures penetration in national, regional, and international markets and protects local goat meat producers. All in all, it is likely to benefit the rural sector of the Tete province of Mozambique.

The success of registration of regional GI is an example of other potential products that should be given due consideration. For example, the recent **UNCTAD report on Mozambique's White Prawn** (UNCTAD, 2022) details the territorial link and reputation of the Mozambique white prawn and its relevance to rural development; thus, stakeholders and actors must consider Mozambique white prawn as another potential object of GI protection at both national and regional levels.

Registration of Tete goat meat demonstrates the competitiveness of local products in the regional market and showcases quality improvement in goat rearing and commercialization (Mwali, 2018). However, there are challenges to maintaining quality and developing the sustainable practice of Tete goat meat, which are highlighted in this section.

Promoting Sustainable practice. GI protection for Tete goat meat further ensures commercialization of the meat. However, the sustainable practice of meat production is essential for both food security and sustainability. Given that the GI acts as a signaling device for penetrating products in the export market, it is important to ensure that Tete goat meat is equally available in the domestic market, as many rural communities in Tete province and other parts of Mozambique rely on such meat as a form of direct consumption. This is important, as the Tete goat is an essential part of the goat value chain in Mozambique and thus contributes to maintaining food security. To this end, overproduction of goats in Tete province may also result in climate change and other environmental issues. Therefore, developing a sustainable value chain that promotes goat production and benefits the rural community should be encouraged.

Community oriented market system. GI protection for Tete goat meat should ensure improvements to the livelihood of producers and communities in Tete province. Therefore, the government should work closely with producers in strengthening their capacities in goat-keeping and providing infrastructure or other resources to address barriers to large-scale production of meat. There is an incentive for producers if they organize themselves efficiently which benefits greater production, which in return offers market access (Cardoso et al., 2022). Hence, organized producers are key to the success of Tete goat meat management.

A community-based goat marketing system should be encouraged that focuses on goat-keeping moving from individual households or farmers to collective management of goat-keeping. This will ensure large-scale production of goat-keeping. Moreover, a 'community-based' approach would further ensure strong interaction along the Tete goat value chain and minimize potential goat-related diseases by collective interventions. Overall, this approach can be useful in managing internal (among producers and actors involved) and external pressures (international/regional markets) and maintaining the quality of the product (Kizos et al., 2017).

Technical Support from international agencies. It is well recorded that the challenge for developing countries is also managing GI protection, which requires cost and capacity-building. Therefore, the Mozambique government should continue collaboration with regional institutions in the African Union but should also consider seeking technical support from the World Intellectual Property Organisation (WIPO) Enhanced Integrated Framework (EIF), FAO, and UNCTAD to enhance capacity-building and training for producers and actors involved in Tete Goat-keeping. In the past, these institutions have supported development-related projects in Mozambique, therefore receiving technical support in identifying products such as honey and *malambi* (baobab) flour in Tete and Zambezi for potential GI protection should be assessed.

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