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**PRE FEASIBILITY STUDY REPORT ON INVESTMENT
OPPORTUNITIES FOR VALUE ADDITION ON AGRICULTURE
AND LIVESTOCK PRODUCTS IN MERU COUNTY- HIDES
AND SKINS**

FIRM-RFP-113

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MERU COUNTY
**INVESTMENT &
DEVELOPMENT**
CORPORATION

FINANCIAL INCLUSION FOR RURAL MICROENTERPRISES

TANNERY PROCESSING PLANT MUGAE, BUURI SUB COUNTY

**Location of site – Latitude: 0.0236719 N:
Longitude: 37.598610 E**

Proposed Skins and Hides Processing

THE PRODUCTION TRENDS, CURRENT AND POSSIBLE OPTIMAL PRODUCTION LEVELS AND THE AREA COVERAGE IN MERU AND NEIGHBORING COUNTIES

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List of Abbreviations

DA	Department of Agriculture
ERS	Economic Review Strategy
GPS	Global Positioning System
GTZ	German Agency for Technical Cooperation
H&S	Hides and Skins
KIRDI	Kenya Industrial Research and Development Institute
MALF	Ministry of Agriculture Livestock and Fisheries
MCIDC	Meru County Investment and Development Corporation
NPV	Net Present Value

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Executive Summary

This report envisages the establishment of a tannery plant for the production of 21,616 square feet of wet blue leather per month.

There is no tannery in Meru at the moment and all hides and skins produced are sold to traders at as low as KShs 20/= per piece. The slaughter house operators do not consider this a valuable business. As such the County is losing on a valuable resource.

Of the produced hides and skins, about 40% is wasted because of poor flaying skills, branding marks on the animals as well as poor storage practices. The potential investors should consider backward linkage investment in training, collection and transport systems to

guarantee valuable raw materials.

The location of the proposed processing site is central to be able to receive raw materials from Mitunguu, Igoji, Kangeta, and Isiolo. It is also able to collect efficiently from Nanyuki in Laikipia County.

The plant will create employment opportunities for 57 persons. The total investment requirement is estimated at about KShs 216,436,618.3 million, out of which KShs 131,885,320 million is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 21 % and a net present value (NPV) of KShs 233,976,468.9.



1. Objectives of the Report

The objective of this report is to present the viability of the proposed Mini Tannery Processing plant establishment. This report primarily considers the business case for production of wet blue leather.

2. Methodology

The study and proposed design of the factory was conducted in four phases.

2.1 Phase one; A prefeasibility study was undertaken in the county to establish the availability hides and skins for processing wet blue leather on an industrial scale.

2.2 The two phase; consisted of soil structure sampling, to determine the ground formation, review the architectural design and agree on the site plan.

2.3 The three phase; was to complete the architectural designs and develop the BQs. The architectural designs were made

based on the future expansion needs, lessons learnt from selected site visits and machine manufactures' specification. It also took into account the basic industrial safety as well as food processing standards in Kenya and globally.

2.4 In the fourth phase; the team sourced the processing plant (including price and manufacturer's specification), determined the necessary additions/accessories, sought and identified them locally.

3. Hides and Skins Production

Trends, Current and Possible Optimal Production Levels

3.1 Introduction

Leather is one of the most widely traded commodities globally estimated at over US\$100 billion a year. Its demand is growing faster than supply. Despite this growing global demand, Kenya, with 70% arid and semi arid area, conducive for livestock farming remains a marginal producer.

World stock of bovines, sheep and goats 2011-2013

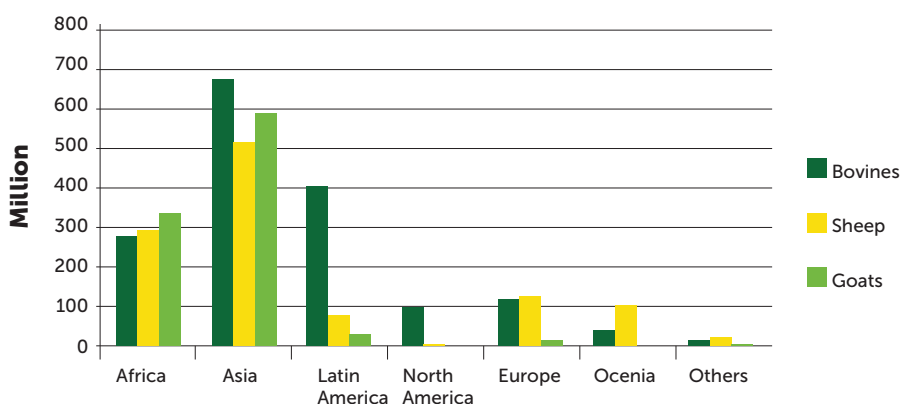


Figure 1 Global Livestock herd 2011-2013 (Data FAO -2015.Graph by Erickson International)



The expansion and growth of leather trade depends primarily on the number and quality of livestock available for production. This is the reason why Asia is the largest leather producing region. The average livestock numbers at the global level for bovines, sheep and goats between 2011 and 2013 was 1,646.5M, 1,163.2M and 992.82 M heads respectively.

At the global level, Brazil, India and China account for 37.39% of raw bovine hides. In sheep skin, China accounts for 22.34% of the world production, slightly more than the total production in Africa, whose combined production in this category accounted for 20.1% of the global production. The global trade in bovine's hides was worth 5,095.7 M USD in 2013 up from 4,549.0M USD in 2012. Sheep Skins were worth 1,450.7 M USD up from 1,289.5 M USD for the same period.

From figure 1 above, Africa owns 17%, 26% and 34% of the global herd of Bovines, Sheep and Goats respectively, second to Asia that is home to 41%, 45% and 59% of the same animals.

Africa's decimal performance in this trade is due to inefficiency in raw skin/hide production, quality of animals, branding marks, ticks and skills of flayers. Despite the growing global market for leather products, African countries remain marginal players. Although owning 24% of the global livestock population, the continent accounts for only 4 percent of world leather production and 3.3 percent of value addition in leather. Most African nations are exporters of raw hides, skins and wet blue leather. Production of finished leather is very low. See table 1 below.





Table 1. Global Production of Hide and Skins

Production of Hides and Skins (Thousand Tonnes)	Bovine		Sheep Skins		Goat Skins	
Zone	2012	2013	2012	2013	2012	2013
World	6,400.3	6,574.4	546,282	550,031	479,365	486,660
Latin America and Caribbean	1,710.7	1,775.2	22,689	23,096	9,913	10,024
Africa	585.1	598.8	109,109	110,849	111,878	114,333
Asia	1,892.7	1,966.1	267,246	268,011	340,640	345,419
Kenya	45.5	46.7	1,781	2,212	2,639	3,279

Source FAO -2015

3.2 Leather, Hides and Skins Sector in Kenya

The livestock sector contributes 10-15 per cent of Kenya's GDP, accounts for over 30 percent of the farm gate value of agricultural commodities and employs over 50 percent of the agricultural labour force.

At the national level hides, skins and leather industry contributes around 4 per cent of agricultural GDP and 1.5 per cent of overall GDP. The country has in recent years produced over 2 million hides (mainly cattle, with some camel) and around 4 million skins (goats and sheep), although production declined in 2008 as a result of the violence following the December 2007 elections.

The Government's strategy to develop the leather industry springs from its Vision 2030 Programme which promotes industrialization and value addition in key sectors. The hide, skins and leather industry is one of Kenya's main agricultural sub-sectors. The industry involves three sub clusters: (i) livestock breeding, (ii) raw hides, skins and (iii) leather and leather products. The leather contributes KShs.10.6 billion to the economy and

creates employment to over 22,540 people directly and indirectly. The industry is mainly dependent on the large livestock resource base with an estimated population of 17.5 million cattle, 27.7 million goats, 17.1 million sheep and 3.0 million camels. There are marginal production levels from fish (Nile perch), farm Ostriches and farm Crocodiles.

a) Hides and skins sub-sector: The hides and skins sector has transformed from a purely raw material source to relatively modern industry adopting the changing technology and market trends. The sub-sector has become the tanning hub for the region through procurement of hides, skins and supply of leather. Production consists of 89 percent of semi-processed tanned "wet blue" and some crust leather. The balance consists of finished leather footwear, handbags, travel ware, raw hides and skins.

b) Tanning sub-sector: There are 14 existing tanneries in Kenya, several mini tanneries and over 85 leather goods/ cottage units. The tanneries have installed capacities standing at 60% for wet-blue, 25% for crust leather and finished leather at 15%.

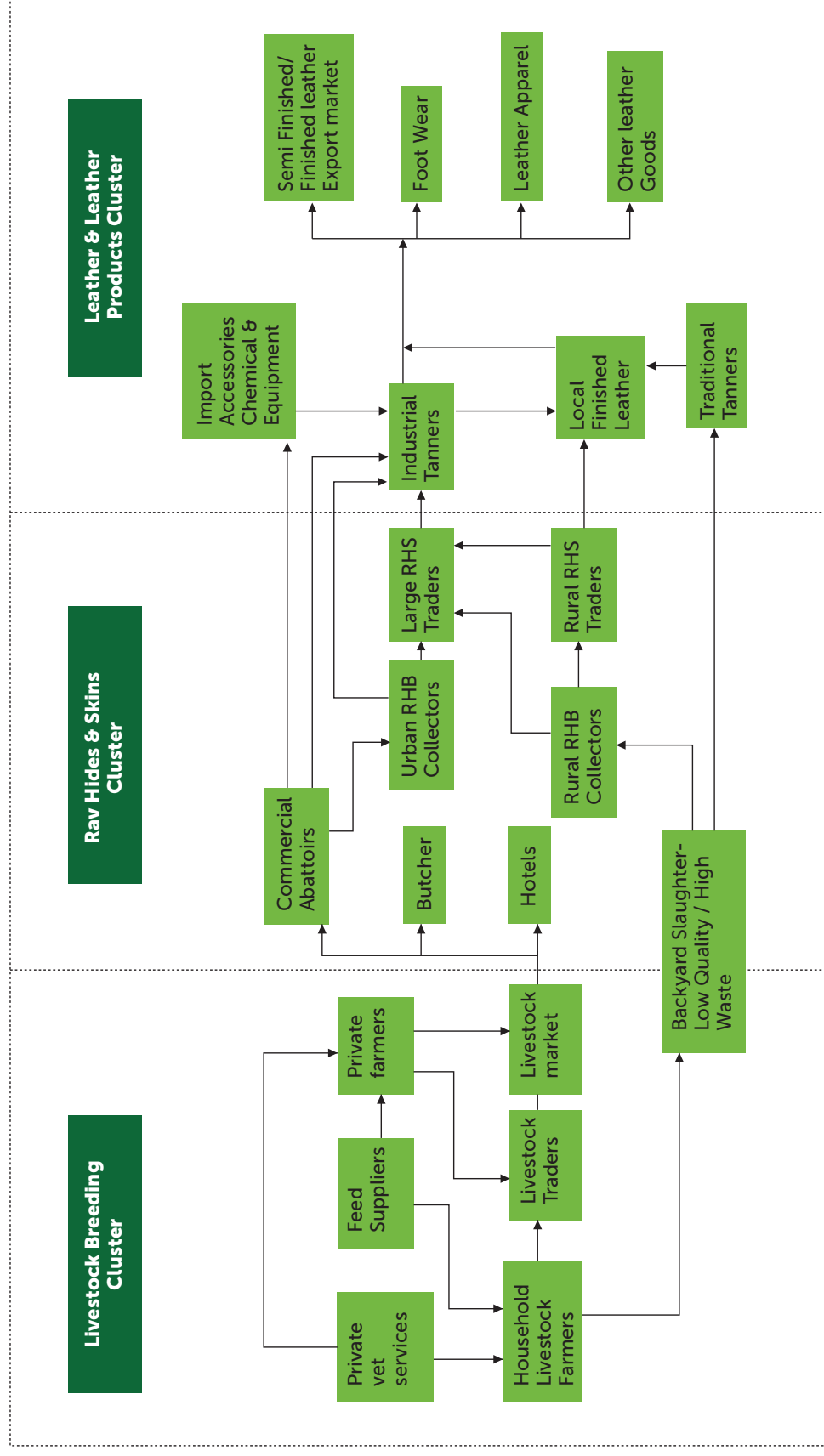


c) Leather goods and footwear sub-sectors: Almost all leather goods manufacturers that operate in Kenya today are considered small and micro enterprises. It is composed of suppliers of raw hides and skins, abattoirs, traders, tanneries, and producers of leather products in varying sizes. Broadly, the sector is divided into the formal and informal sector.

The industry is constrained on the supply side by the quality of raw hides and skins, the limited focus of tanneries on exporting “wet blue” and capacity for producing finished leather products. Only a few

tanneries supply crust and finished leather in Kenya. Alpharama Company Ltd is the major supplier to the export market. On the demand side, the industry faces extremely intense competition due to imports of shoes and leather products for the second-hand market and low priced footwear imports, particularly from China, India, and Ethiopia, leading to reduction or closure of some of the shoe manufacturers in Kenya. Production efficiency and quality in the previous stages of the value chain directly affect the success of the players in the later stage. Figure 2 below illustrates these cluster inter-relationships.

Figure 2 Livestock Hides and leather value chain





d) Export of Leather and Leather Products

In 2009, the government imposed an 80 percent export tariff on raw hides and skins. This led to a drop in exports of raw hides and skins by 3 percent while increasing tanned leather product exports.

The semi processed tanned “wet blue” leather accounted for 89 percent (US\$131 million) of the value of total leather exports in 2012. Raw hides and skins accounted for 27 percent of total leather exports in 2007 as illustrated in figure 3 below.

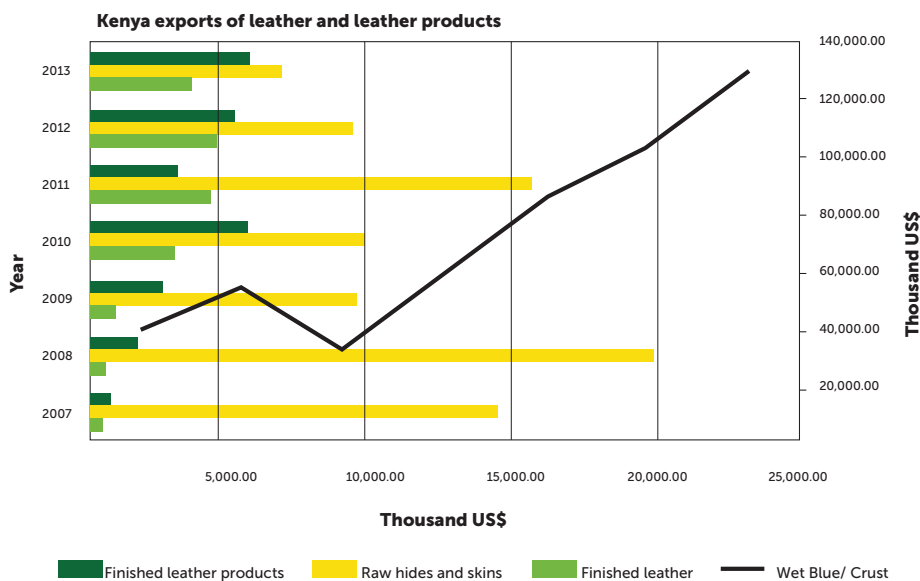


Figure 3. Kenya Export of Leather and Leather Products. Source FAO (2015)

India, Italy, and China/Hong Kong were the major destinations of Kenya’s wet blue leather in 2013. China tops the list with US\$63 million, followed by Italy and India with US\$45 million and US\$10 million, respectively. The Chinese have established an abattoir in Naivasha to collect donkey hides. This product has a high demand in Italy as well.

Although the country served as a leather footwear hub for East Africa two decades ago, it is currently minor exporter of leather and leather products (only US\$140 million, 0.14 percent of world export in

2013). It has become less competitive than global leaders including China, Italy, and Vietnam in all competitiveness indicators, except availability of and access to raw materials.

Most of Kenyan leather is produced and sold as a commodity with little quality or design differentiation. Exports consist of semi-processed tanned “wet blue” leather (89 percent), raw hides and skins (5 percent), finished leather (2 percent), and leather footwear and handbags, travel ware, and other leather products (4 percent).



e) Key Developments

The Leather Development Centre estimates that if Kenya produced leather from all its hides and skins, earnings could rise fourfold to around KShs 16 billion and directly employ around 10,000 people. Kenya could be producing much more footwear for its domestic population rather than being flooded by cheap imports undermining local production – but this depends precisely on the industry becoming more competitive.

Kenya Industrial Research and Development Institute – (KIRDI) is now successfully processing fish skin leather from Nile Perch. The country also has supplies of rabbit, crocodiles and ostrich skins from local farms, which have been little processed so far but have increasing demand on the international market.

The government has developed a five

year Strategic Plan for the leather sector and in May 2010 established the Leather Development Council, comprising the industries various stakeholders in a form of public-private partnership, to oversee strategy towards the sector.

The Council will also establish a participatory body to decide where the KShs 175 million allocated by the government to set up new tanneries, will be spent. Another critical issue is to provide better extension services for livestock producers, to improve the quality of hides and skins.

f) Challenges of the Sub Sector

A government study in 2014 shows that the sector loses KShs 4.5 billion a year through damages to hides and skins, mainly through tick bites, branding and flaying (skin removal) techniques after slaughter of the animals. This is illustrated in the table 2 below.

Table 2 Loss in the hides & Skins

	Defects	% damages	Value loss (KShs in Billion)
Pre-slaughter -	Branding	21.0	0.95
	Tick bites	23.0	1.04
	Sores & wounds	4.0	0.18
Peri & Post slaughter	Flay damage	35.0	1.58
	Dragged grain	12.0	0.54
	others (e.g. putrefaction etc)	5.0	0.23

Source: Prognosis of the Leather Sector in Kenya; The Upheavals and Antidotes Associated with Value Creation - Mwinyikione Mwinyihija



3.3 Skins and Hides Leather Production in Meru

Production in Meru has been on the rise. Goat skin production increased by 40% between 2013 / 2014 and by 23% between 2014 / 2015. Cattle hides for the

same period increased by 39% and by 2% respectively. There was a small amount of camel skins mainly from Isiolo and Marsabit. See figure 4 below.

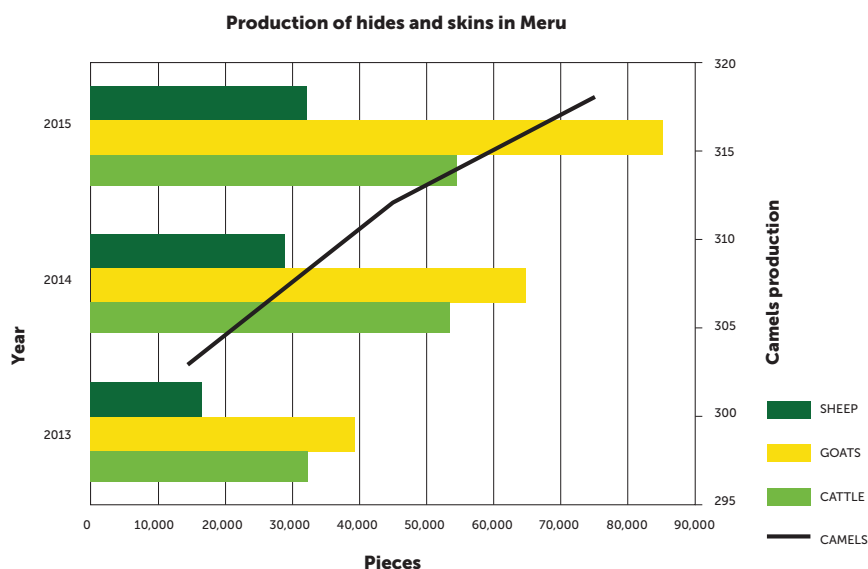


Figure 4 Hides and Skins Statistics – Meru County

Statistics; Republic of Kenya Ministry of Agriculture, Livestock and Fisheries 2015. Graph Erickson International.

3.4 Institutional Environment

The County has established plans to improve Hides and Skin production along the value chain, and initiate value addition into wet blue stage of leather production. At the animal husbandry stage the following initiatives have been undertaken to improve the health of animals:

- a) Disease and vector control: The target for this initiative is to reduce tick, Tsetse fly and other diseases to less than 10% prevalence in over 70% of the animal herd by 2017. The planned activities include
 - i) Vaccination - Large animal vaccination

of diseases, control, disease surveillance and reporting, dip management training, tsetse traps setting & spray.

- ii) Livestock movement control.
- iii) Veterinary public health- Slaughterhouse inspection & licensing
- b) Hides & skins and leather development. Training flayers, stakeholders, hides and skins, inspection, licensing of hides and skins stores and banda's.

3.5 Determining the Capacity of the County to Generate Adequate Raw Materials.

To examine the circumstances of



production in Meru a survey was conducted in Meru and the surrounding Counties (Tharaka Nithi and Isiolo). The

areas visited in Meru are pointed out in the map in figure 5 below.

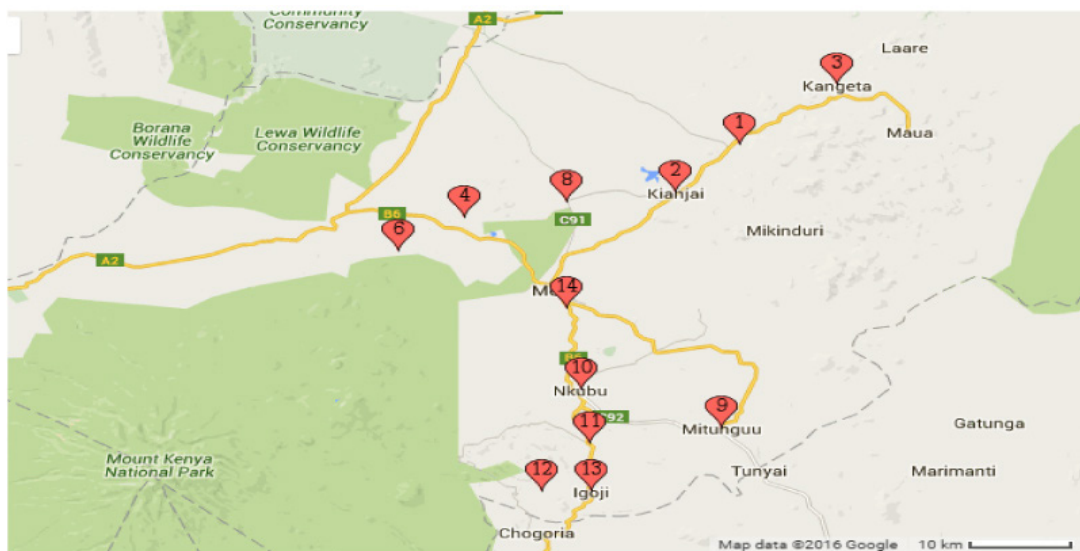


Figure 5 Map of SH sites Sampled

The sampled locations included 15 Slaughter houses, 6 drying sheds and 6 hides and skins traders. Table 3 below summarizes the volumes available from the field sample and statistics from Isiolo and Tharaka Nithi Counties.

Table 3 Raw material availability in Meru County

Production	Survey Sample	Actual DOA Data (2015)
Number of Slaughter Houses	15	99
Others (Drying sheds – “bandas”)	6	12
Hides and Skins Merchants	6	12
Sampled Slaughter Houses (Areas Sampled)	Muthara, Kianjai, Kangeta, Kiirua, Nyaki East-Thuura, Kibirichia, -Muruguma, Naari- Gitimene, Ruiru Rwarera, Mitunguu, Abogeta, Nkubu, Kanyakine, Igoji West -Kinoro	



The production volumes from the sample are summarized in table 4 below.

Table 4 Sample Results Summary

Survey Sample	Bovines Hides	Sheep /Goat skins
Annually Slaughtered animals	16,437	61,404
Daily Number of animals	45	168
Kgs daily/pieces	901	168
Number of sq feet and skins Unprocessed	21,616	168
Monthly Tonne and pieces- Unprocessed	27.02	5,117
Price per Raw Hide /Skin	KShs 20.00	KShs 20.00
Estimated waste – Low value Kgs/ Pieces	40%	40%
Isiolo- Sub county – Annual Production	72	72,000
Tonnes /Number	14	29,494
Tharaka Nithi Annual Production Tonne/Number		

Source Field survey – Erickson International

3.5.1 General observations from the field sample (Factors affecting quality of hides and skins production in Meru County)

About 70% of the animals slaughtered in Meru are from Isiolo, Marsabit, Wajir and Tharaka Nithi and Tigania in Meru County. These are primarily zebu cattle, sheep and goats

- a) Animal husbandry practices affecting quality of hides & skins
- i) In the source Counties, farmers keep livestock for other purposes such as signs of wealth as well as for ploughing. They sell the animals only to raise money for urgent needs or during drought when they have depreciated in health. Therefore the animals slaughtered are old with damaged skins through exposure to the environment. Secondly these animals are driven long distances on foot incurring more damage on the skins. The pastoral communities' animal husbandry practices do not generally

allow dehorning which results into injuries in crushes, in fights or during transportation.

- b) Scratches and Thorn rakes
- ii) Scratches are amongst the most common mechanical damages found on both sides of the hides. These occur from the bush and scrub grazing areas. Skins / hides with scratches are degraded as tanners try to obscure the faults on the grains by embossing or printing, which also increase processing costs. Consequently, the raw materials fetch lower prices.
- c) Branding
Due to the widespread cattle rustling practices, the local authorities and farmers in the pastoral communities brand cattle with hot irons causing high losses in the hide estimated at 10 to 40 percent of the value of the hide.
- d) Tick bites



Due to lack of insecticides spraying facilities, infestation of ticks is widespread in the source counties. This causes damage therefore down-grading the hides and skins.

- e) Slaughter facilities and slaughter practices affecting quality

Slaughter facilities in Meru consist of slaughter slabs in rural and urban areas. They bring about these challenges;

- i) Rural slaughter slabs: The tools used in these facilities cause damage to the hides and skins during slaughter. In many cases running water is not available and hides are not washed off after slaughter. More often than not lifting blocks for raising carcasses are not available and therefore all operations are carried out on the floor. Rubbed grain damage: This damage is produced by dragging the unflayed carcass over rough and uneven ground and can even be caused by rough concrete.
- ii) Bad pattern: This is caused by indiscriminate ripping. 'Ripping' being the initial opening cuts down the centre of the belly and the four legs. The correct method of ripping ensures a uniform pattern, with bellies of equal width, well opened shanks and dewlap, a round butt and adequate tails.
- iii) Flay cuts, scores or gouges: This damage is caused by the careless use of the knife or by the use of unsuitable knives. Flay cuts constitute the most serious mechanical defects on hides and skins. Lack of proper tools like the rounded flaying knives and lack of flaying skills.

- f) Causes and impact of post slaughter defects on quality

- i) Grain cracks. Drying in a crumpled condition and by multifolding causes grain-cracks or any pressure and strain, combined with low moisture content will result in this troublesome damage.

- ii) Bacterial damage is sometimes not evident out rightly. Indications or signs of putrefaction are loss of hair in some areas

- iii) Mechanical damage: When hides are being prepared for air-drying by the framing method, it is customary to remove excess flesh left on the hide by de-fleshing. During this process hides suffer flay cuts and gouges are made.

- iv) Defects during wet salting: In wet and dry salted hides the salt acts as bacteriocidal agent as well as a preservative against insect damage, but certain halophyllic bacterial (salt loving) can thrive in a salted hide and can give rise to a common defect known as "red heat". Uneven salting, poor quality salt, attempts to pile too high and the use of unsatisfactory premises are some of the causes of defects during wet-salting.

- g) Damage caused during storage, packaging and transportation
Even after the hides are properly dried or cured they may still suffer damage by careless handling. Inadequate strapping when the hides are baled can do serious damage by the loose shanks and edges getting torn. Outside hides of loosely packed bales have been almost torn in half when being moved and thrown about during transportation. Excessive



pressure by baling presses will cause tearing of the edges and cracking at the folds. Wet salted stocks can suffer damage by abrasion if baled singly hair side out.

3.5.2 Quantities for processing

From the 15 Slaughter houses sampled, 27 tonnes of raw hide and 5,117 pieces of goats and sheep are obtained per month. It is possible to process 21,616 sq feet (An ideal undamaged hide produces 12 – 15 Square feet of wet blue).

of wet blue per month. The County is centrally located to receive supplies from Isiolo, Marsabit and Wajir. The proposed tannery should seek to invest backwards along the value chain to influence the quality of hides and skin. .

The County has abundant fresh water resources that are ideal for curing and treatment.

4. The proposed Tannery

4.1 Proposed Location

The plant is proposed to be in Mugae on the D490 Ruiri-Isiolo road 15 Kms after Ruiri Town. The site is 27 Kms from Meru,

12 Kms to Isiolo town and 35 Kms from Muthara and 59 Km from Mitunguu. This is a semi arid location with sparse population as compared to where the Slaughter Houses are. It is a favorable location for the waste management, (water treatment lagoons and affluent from the process). The D490 road is a bitumen surfaced road thus making communication easy. The site is also favorably located to receiving skins and hides from Isiolo County.

4.2 Market potential.

The market for wet blue leather is large. The national production is not adequate to sustain demand due to the challenges mentioned above. The production of this plant will have a ready market for export or for further processing into finished leather with processors in Nairobi.

4.3 Products

a) Manufacturing Design

The input capacity of the factory will be able to take 3 tonnes of hides and 220 pieces of skins per day. The factory will operate for 26 days with a down time of 4 days in a month for maintenance.

Production Process. The process for producing wet blue leather is illustrated in figure 7 below.

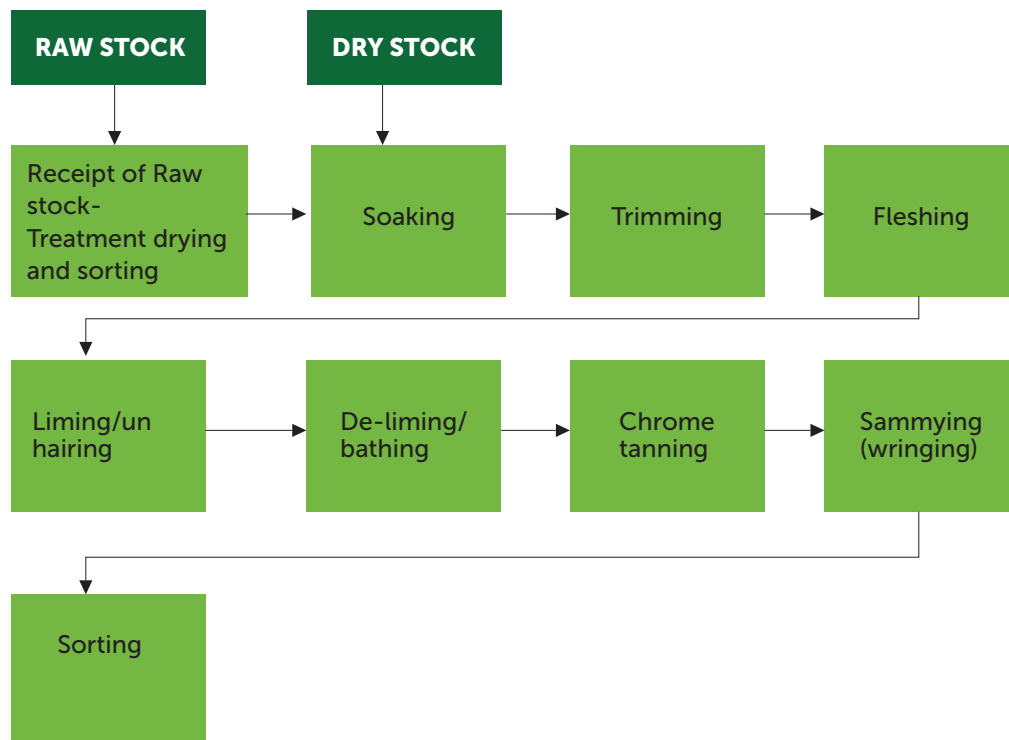


Figure 7 Wet Blue Production Process

i) Receipt of Raw Stock

Upon receipt of raw stock each hide should be weighed and stamped. It should then be moved to a hide house where it can be stored and dried for one week without danger of spoiling. The most common and practical method is to spread them on the ground under an open shed away from direct sun rays. The flesh side of the hides should be treated with a solution containing an arsenic compound to protect them from insect and bacteria damage. Hides dried in this manner will soak back well. The individual packs of hides and skins

are sorted according to size, weight and condition.

ii) Soaking

This is aimed at restoring hides and skins to the state they had immediately after flaying from the animals. Flayed hides and skins are in most cases cured to prevent putrefaction before reaching the tanneries.

iii) Trimming

Is carried out to remove those parts of raw hides which would be of no use as leather and which could cause difficulties in latter operations.



iv) Fleshing

Fleshing is performed to break up the fibers of the hide substance and to remove flesh tissues. Wet -salted stock of good condition may not need the fleshing after soaking, but all stock should be fleshed after liming.

the two rollers of the machine for this operation), a manufacturer may decide to do it by hanging the leather on poles or simply by letting them lie in piles.

v) Liming /un-hairing

Liming is required to open up the hide structure and to dissolve the hair roots, leaving a clean grain side free from hair.

ix) Sorting

After sammying the leathers are sorted and graded according to grain quality.

vi) Deliming / bathing

Pickling removes the lime including certain hide constituents and degradation products that are detrimental to a satisfactory result in the subsequent processes by soaking in a weak solution of acid.

The production of wet blue leather involves the following additional processes in the pickled leather production.

vii) Chrome tanning

The skins & hides are immersed in a basic chromium sulfate solution within a large revolving drum that tumbles the skins and hides.

viii) Sammying (wringing)

In this process, the moisture content of semi finished leather is reduced. Although the usual practice is to use a sammying machine (which squeezes the wet leather as it passes between

4.1 Product Standards

The processor should adhere to the COMESA HARMONIZED COMESA/DHS STANDARD 247:2005. Other standards will include but are not limited to the following;

1. ISO 2418, Leather — Chemical, physical and mechanical and fastness tests — Sampling location
2. ISO 3380, Leather — Physical and mechanical tests — Determination of shrinkage temperature up to 100 °C
3. ISO 4045, Leather — Chemical tests — Determination of pH
4. ISO 4684, Leather — Chemical tests — Determination of volatile matter
5. ISO 5398-1, Leather — Chemical determination of chromic oxide content — Part 1: Quantification by titration
6. ASTM D4576, Standard test method for mold growth resistance of wet blue.

ENGINEERING

Machinery and equipment required for the envisaged project are shown in Table 5. Below. The total cost of machinery and equipment including is estimated to be KShs.131,885,320.



Table 5 Equipment Required

Sr. No.	Item	Qty.
1	Mixer	2
2	Drum	2
3	Fleshing machine	2
4	Wring / setting-out machine	1
5	Measuring heavy duty	1
6	Balance heavy duty	1
7	Hot water generator	1
8	Scales, hand tools, transport wagons, pallets & work tables	1

Land, Building and Civil Works

The total land requirement is 3 acres. This will include raw stock store, chemical store, production area, grading / packing room, mechanical workshop, offices, and

space for effluent treatment and for future expansion. The space occupied by factory buildings is estimated to be 1000 m². The total cost of building is estimated at KShs 11,500,000.



5. Waste Water Treatment

In leather manufacturing, substantial effluent is generated which, if not fully treated, can cause air and water pollution.

The water discharged from the processor when operating at full capacity will be 12 thousand liter per hour. The factory design has incorporated the treatment of this waste to treated water and biogas for use in the factory, and a filter cake of manure



for use on farms. This use of biogas and recycled water will save on operating expenses. The sewer plant will be a combination of UK sources equipment and

locally fabricated accessories that need to be replaced frequently.

Figure 6 below illustrates the waste treatment and management plan.

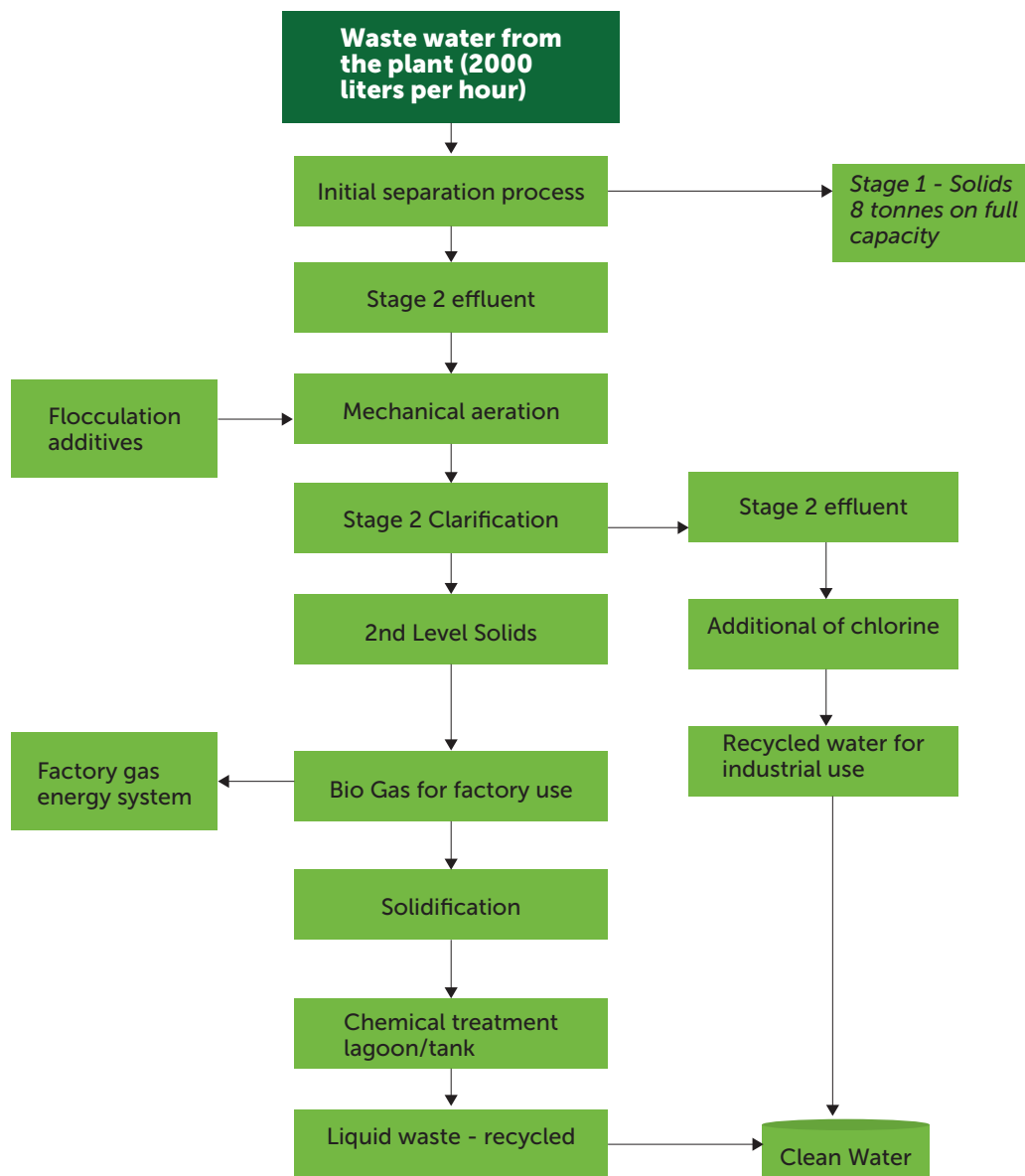


Figure 8 Waste water Management



6. Conclusions and recommendation

6.1. Conclusion

The proposed project is a viable business which will contribute to modernizing agriculture in the county. The venture is designed for wet blue processing of hides and skins

The plant will require a total cash outlay of KShs.216, 436,618.00 -.This includes the cost of constrution and processing machine installation, other fixed and operating costs for the base year.

6.2. Recommendations

Having studied the volume of production of hides and skins in the County and considered the proposed project we recommend as follows;-

- a) Implementation of the site infrastructure can be done in two phases; i.e. Phase one comprising of the machine house, boiler house, workshop, water and electricity installation, sewerage and waste water treatment plant, installing and commissioning of the processing machines. Phase two would include the completion of the office block, staff amenities, health centre and road works in the complex.



7. Financial Plan

The financial projections contained in this section is based on the following foundation

7.1 The plant will require a total cash outlay of KShs.216,436,656. This includes the cost of construction, processing machine installation, other fixed and operating costs for the base year.

7.2 The Cost of machinery is based on actual prices CIF upto the port of Mombasa as at July 2016. These are from specific manufactures.

7.3 Costs of local assembly parts are from Nairobi's industrial area as per KIRDI specifications.

7.4 The BQs are based on actual costs of civil and engineering works as at July 2016. Site inspection visit and soil sample was conducted in July 2016.

7.5 Prices of raw hides and skins were sourced from slaughter houses and established traders

7.6 Prices of the finished products were sourced from leather processors in Nairobi.

7.7 Visits were conducted to other processors in Nairobi to establish the physical requirements.

7.8 Architectural designs were made based on future expansion needs, lessons learnt from selected site visits and machine manufactures' specification. It also took into account the basic industrial safety and standards in Kenya and globally.

8. Financial projections Summary

Detailed financial analysis are attached to this main report as a separate document



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DEVELOPMENT**
CORPORATION

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