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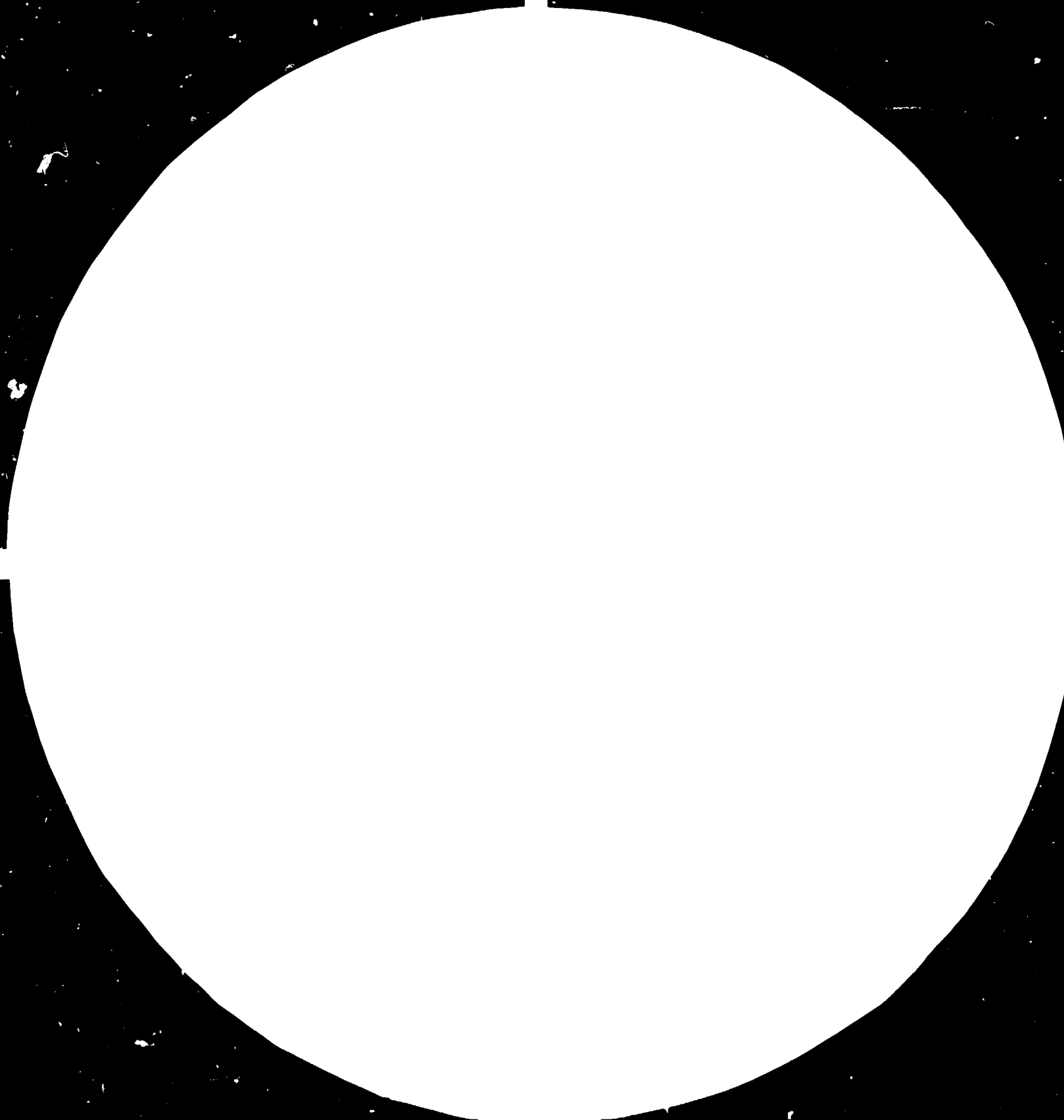
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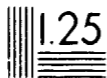


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ESTABLISHMENT OF A GAME SKIN TANNERY

US/GLO/31/120

ZAMBIA

Technical report: Pre-Feasibility Study*

Prepared for the Government of Zambia
by the United Nations Industrial Development Organisation

Based on the work of Gerhard Falsner,
consultant in game skin tanning

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ABSTRACT

The subject project UC/GLO/81/L20/11-53/31.6.A entitled "Preliminary Assistance for the Establishment of a Game Skin Tannery" with its main objective to utilize commercially the hide and skins obtained through licenced hunting and government controlled cropping operations, commenced on 22 February 1984 and was completed on 13 March 1984.

The mission findings lead to the consultant's conclusion that the envisaged game skin tannery can be a viable and profitable operation provided suitable arrangements are made to flay, treat, preserve and collect the raw material - hides and skins - in a proper, well-organized and effective manner. The existing infrastructure in Chilanga is considered most appropriate to accommodate the tanning operations. To facilitate the marketing of processed game skins and to cater for the growing tourist market, the administrative system to obtain the required export documents for game skins should be reviewed and possibly simplified.

EXPLANATORY NOTES

During the mission, the following exchange rates have been employed:

1 US dollar = 1.57 Zambian Kwacha

1 DM = 0.60 Zambian Kwacha

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INTRODUCTION

A. Background

Zambia disposes a large variety of wildlife, concentrated mainly inside National Parks and Game Management areas. Through licenced hunting, together with proper wildlife management, substantial quantities of game hides and skins are produced, however, only a small portion thereof is being recovered and commercially utilized with the exception of skins originating from animals shot through organized hunting safaries which in most cases are exported raw representing the hunter's trophies. Zambia has, apart from some artisan types of tanning establishments around Lusaka, no proper machanized tanning facilities for game skins which, from a technical point of view is differing considerably from the usual leather manufacturing.

Under the projects ZAM/69/506 and ZAM/74/005 - Development of Small-Scale Industry, a game skin tanning expert was fielded from 1973 to 1976. Due to financial constraints faced by the government counterpart agency (RUCOM) during the implementation of the project, the project results had only limited impact on the game skin tanning operation of the country.

Although the hunting of elephant in Zambia has been banned since 1981, mainly due to the experienced degradation of ivory, controlled hunting exercised by the Department of National Parks and Wildlife Service as protective measures of human life and settlements is an ongoing operation; similar actions are taken in respect of hippopotami - hides of these species have never been recovered.

Further, there is a substantial potential of game skins being available through the provision of game meat rations for the staff stationed in the many outposts of the National Parks. In addition, two commercial crocodile farming operations have been established during the past years, a meaningful production of skins is expected to take place within two to three years. The establishment of a well-designed game skin tannery would provide the instrument to utilize these valuable and renewable natural resources to the maximum extent possible thereby contributing to the creation of a novelty leather goods industry hitherto non-existent in the country and cater for the growing tourist trade as well as for the international market of exotic leather and game skins.

As a further aspect, the establishment of such a tannery would have a positive impact on the employment sector and the generation of foreign currency earnings.

B. Official arrangement

UNIDO assistance in the establishment of a game skin tannery was requested by the Minister of Lands and Natural Resources, dated 17 May 1983. In the following^d project budget of UNIDO, inputs, amounting to US\$7,000 in convertible currency was approved. The consultant was briefed in Vienna on 23/24 February 1984 and left for Zambia on 25 February 1984 where he remained in field for the subject project until 13 March 1984.

C. Objectives

The immediate objectives of the project were:

- (a) provide information on the availability of game hides and skins in the various parts of the country considering the seasonal fluctuations;

- (b) prepare a project proposal for the establishment of a game skin tannery taking into account the most suitable location especially for the tanning of elephant and hippopotamus hides and the processing of crocodile, zebra, as well as other game skins.

II. FINDINGS

A. Distribution and natural habitats of game in the country

Zambia is endowed with 19 National Parks (NP) covering a total area of approximately 60,000 km² of which the Luangwa and the Kafue National Parks are by far the largest in terms of game, the most populated. In most cases, adjacent to the NP are the game management areas (GMA) numbering at present 30 and having a combined area of 163,000 km². The primary function of the GMAs is to allow the free movement and migration of game to and from the NP, thus reducing the danger of vegetation degradation in specific habitats and also to perform a buffer function between the Open Hunting Areas and the NP. The combined areas of the NP and GMA are covering nearly 30% of the country. Estimates on the game population in respect of the various NP and GMA are vague and therefore are not recorded in this report. However, it has been indicated that the country's overall elephant population has declined from the recorded number of 150,000 in 1978 to approximately 85,000 in 1983, mainly through poaching. So far as hippopotami are concerned, this species has increased its population in general with some concentrations in certain areas (see Annex II). This is explained by the fact that hippopotami are considered of minor interest by the illegal hunters.

With reference to the distribution of game, it can be said that elephants are mostly found in the south east, south west and north western part of the country, whereas hippopotami populations are concentrating mainly in the south east and south west. Zebra and antelopes are found in large numbers chiefly in the southern regions. Crocodiles are inhabiting virtually every river and lake throughout the country with some concentrations in the north west. Predators like lions, leopards are distributed all over the country.

B. Source of game hides and skins

Hides and skins may be obtained through

- organized safari hunting (catering mainly for overseas clients)
- hunting by residents and non-residents exercised in the GMA and open hunting areas
- subsistence hunting in open hunting areas permitted by the District Councils
- controlled hunting in GMA for the purpose of supplementing rations for the staff of the National Parks and Wildlife Service stationed in remote areas
- hunting of animals which are of imminent danger to human life and established settlements carried out by game scouts on special licences
- cropping operations if implemented
- game farming when the productive stage has been achieved.

C. Availability of game hides and skins

The availability of game skins is directly linked to

- the success rates of the hunters who have been issued with licences to hunt specific animals in defined areas
- the proper skinning of the shot animals as well as the recovery of the hides and skins which is with regret to learn being neglected
- effective preservation and curing methods of the hides and skins obtained in the field
- reliable means of transport to convey the preliminary preserved hides, skins to collection points for intermediate storage and further curing as it might be deemed necessary
- on the possible implementation of control measures to regulate effectively the population growth of certain species.

The availability of game skins is further depending on the government's long-term wildlife conservation policies starting up of game farms, duration of the hunting season (usually lasting from May to November) and the weather conditions of certain regions in the country.

D. Collection of game hides and skins

At present there is no meaningful collection of game skins throughout

GMA exercised - except those deriving from animals shot by overseas safari clients, although the infrastructure to carry out such work does exist. The infrastructure in form of camps and outposts spread over strategic points of the various NP and GMA which are permanently manned by experienced staff of the National Parks and Wildlife Service is most suited to assist and

contribute to the recovery of the valuable raw material at source, naturally this source of supply is expected to provide the bulk of the game skins required to operate the envisaged tannery on a viable basis.

In order to secure game hides/skins in the field, a reasonable benefit for the primary producer (hunter) and collector must be expected from these operations. Overhead costs incurred to cover the operational expenses for salt, fuel, transport and labour have to be fully compensated by the revenue realized through the sale of skins or similar instruments of disposal. There shall be a further incentive based on a bonus system for improving the quality of hides/skins in respect of skinning and curing. But most important of all is the motivation and determination of the field staff concerned to recover and preserve this valuable raw material in a professional manner which will form the basis for the profitable utilization of the same after all, wildlife is of great value to Zambia and even more so for the rural people, the greater the benefits from improving the stronger the interest to conserve it.

E. Game skin tanning

The establishment of a tannery can only be a viable proposition provided the supply of hides/skins is reasonably secured. The lack of an adequate game skin recovery and reliable collection system is considered one of the main reasons why the country has so far not succeeded in establishing a functional mechanized game skin tannery.

At present, there are three artisan type facilities in the country where game skins (with hair on) with varying success are being processed, namely:

- Tanners and Taxidermists of Zambia, Lusaka, a subsidiary of Zambia Safaries and as such chiefly involved in taxidermy work
- Taxidermy Studio, Lusaka - main activity taxidermy work production - few skins per week depending on availability
- Wildlife Conservation Revolving Fund at Chilanga.

This tanning unit was originally designed and constructed to process game hides and skins in co-operation with the Department of National Parks and Wildlife Service. After some initial activities the production came to a standstill.

The buildings - with the exception of an adjacent construction - are in good condition, but this unit does not feature any of the required mechanical means for the game skin/exotic leather production.

This facility is considered as the most suitable premises for a tannery, being in an ideal location next to the Headquarters of the Department of National Parks and Wildlife Service. The plot and buildings are owned by the government. Chilanga is 15 km south of Lusaka.

III. REQUIREMENTS FOR THE ESTABLISHMENT OF A GAME SKIN TANNERY

A. The habilitation of the existing facilities in Chilanga:

- Site: adequate - no preparation received, no additional fencing necessary.

A. Buildings

- (a) Main building: concrete/brick construction, asbestos roof,
floor space: approx.. 300 M² high, centre 4.5 M, side 3 M
no repair or alteration required
- (b) raw skin store: (70m²) no alteration necessary. Required:
two concrete salt pits of 1.5 x 1.0 x 0.3m each.
White washing of the walls with lime, one hand spray pump
for treating skins with bacteriacides
- (c) lime/tanning yard: (40m²). The damaged building is not
required for the initial production - can be repaired when
required.

B. Utilities

Water: pumped in adequate quantities from their own borehole
Electricity: 220/380 V connection to the main
Effluent: does not appear to be of any problem at present

C. Machinery and Equipment

for processing skins with hair on:

Two paddles which can be mounted on the existing pits and driven by
an electro motor
Six fleshing knives
Eight stretching boards 2.20 x 150m
One sewing machine (BONIS)

for tanning elephant and hippo hides

One tanning drum 13 x 20 m complete with drive

One splitting machine, 1800 mm

One leather surface measuring apparatus

for tanning crocodile skins

One tanning drum 0.8 x 1.5 m complete with drive

One reptile glazing machine

One buffing wheel, 100 mm

D. Chemicals and Tanning Auxilliaries

for skins with hair on

Common salt	wetting agent	Basyntan DLE
bactericide	scouring agent	(BASF)
fungicide	acetic acid	fat liquor

for exotic leather like elephant, hippo and crocodile

(in addition needed for those skins with hair on)

sodium sulphide	sulphuric acid	lime
chromitan B	soda ash	sodium bicarbonate
ammonium sulphate	ammonia liquor	bating agent
sumac powder	dye stuff	

From the above listed chemicals and tanning auxilliaries, only the following are at present readily obtainable in the country: common salt, lime, acetic acid, ammonium sulphate, bactericide (Reskol 64 of Cooper), scouring agent (non-bleaching soap/washing powder), sulphuric acid. The others have to be imported from Europe.

C. Estimates on urgent requirement to start up the Game Skin Tannery in Chilanga

i) <u>to process skin with hair on only</u>	
two paddles mounted on top of the existing concrete pits	
timber, bearing, drive shaft, flanges, gear	K 1,200.00
motor (1.5 HP), switches	
tools, like fleshing knives, trimming knives,	
hammers, nails, wooden horses	K 800.00
wooden stretching boards (eight)	K 400.00
One sewing machine for stitching up holes, type	
BONIS C.I.F. US 2200 inclusive spare parts	K 3,300.00
threads, cotton scissors	K 200.00
felt for backing skins if required - two rolls	
at 50m	K 600.00
chemicals US 15,000 (lump sum)	K 15,000.00
	<hr/>
	K 21,500.00
	<hr/> <hr/>

Specifications of the chemicals and tanning agents needed will be worked out timely before the products are actually required by the project.

Working capital K 5,000.00

ii) <u>for tanning elephant and hippo hides</u>	
One tanning drum 1.3 x 2.0m complete with drive	
and motor, F.O.B.	US\$ 8,500
Spares	\$ 850

One bandknife splitting machine	
1800mm working width	US\$ 25,000
Spares	\$ 2,500
One shaving machine - 450 mm working width, fully reconditioned, FOB	\$ 12,000
Spares	\$ 2,000
One leather surface measuring apparatus, FOB	\$ 400
	<hr/>
	\$ 51,250
plus 20% transport/handling charges	\$ 10,250
	<hr/>
	US\$ 66,500

Construction of a concrete plate form (10 x 8m) and foundations for the above machinery erection of a roofed and fenced structure to accommodate the equipment, water and electrical connections, including a water storage tank having a capacity of 5000l

estimated K 7,000

iii) for processing crocodile skins

One reptile glazing machine F.O.B. fully reconditioned	US\$ 3,000
One buffing wheel, 100 mm F.O.B.	US\$ 2,400
One tanning drum 0.8 x 1.5m	US\$ 7,000
Complete with drive, spares	US\$ 1,400
Total	US\$ 13,800
Plus 20% transport and handling	US\$ 2,760
total	US\$ 16,560
	<hr/>
Grand Total	US\$ 109,500

NOTE: In order to keep the initial capital outlay to a minimum level, it is recommended to direct the initial tannary activity towards the processing of game skins with hair on (zebra, lion, leopard, antelope) and commence with the tanning of exotic leather after the continuous supply of the relevant hides and skins have been secured.

IV. ANTICIPATED PRODUCTION OF GAME HIDES AND SKINS DURING THE FIRST YEARS OF OPERATION

It may be expected that a fully organized and integrated game hide/skin collection system operating satisfactory throughout the country will take many years to emerge. The tannery's ability to achieve set production targets is to a great extent depending on the overall success of the service, entrusted with the recovery preservation and collection of game hides and skins, therefore only rough estimates can be made.

Based on the figures of animals shot/sold during 1982 by

A) Wildlife Service (control work)

Elephant	121
Hyeana	1
Hippo	44
Lion	8
Buffalo	11
Crocodile	18
	—
TOTAL	203
	==

For meat rations on special licences

TABLE 1

<u>Specie</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Buffalo	379	209	244
Impala	301	175	200
Warthog	248	205	224
Lechwe	110	65	95
Duiker	22	20	30
Hartebeest	130	97	97
Puku	88	60	60
Hippo	38	15	16
Oribi	18	20	37
Reedbok	50	36	45
Sable	10	-	-
Roan	10	-	-
Kudu	10	-	-
Wildebeest	58	62	62

B. Non-safari Hunters (refers to 1981) m GMA

TABLE 2

Baboon	17	Leopard	108
Buffalo	468	Lion	115
Bushbuk	145	Oribi	55
Bushpig	38	Puku	203

Crocodile	38	Reedbok	152
Duiker	90	Roan	81
Eland	115	Sable	131
Elephant	159	Warthog	346
Hippo	807	Wildebeest	150
Hartebeest	237	Waterbuk	128
Impala	324	Zebra	249
Hyena	19	Lekhwe	73
Grysbok	23	Sitatunga	5
Jackal	7	Tsessabe	17
Kudu	54		
	Total	<u>3,607</u>	

C. Non-safari hunters (refers to 1982) in open areas

TABLE 3

Buffalo	461	Oribi	18
Bushbok	84	Reedbok	174
Crocodile	5	Roan	16
Bushpig	25	Sable	28
Duiker	90	Warthog	196
Hartebeest	248	Wildebeest	27
Hippo	252	Waterbok	73
Impala	132	Puku	68
Kudu	45	Zebra	51
Leopard	10	Eland	128
Lion	7		
	Total	<u>2,138</u>	

D. Non-safari hunters-permits sold by the District Councils (refers to 1982)

TABLE 4

Buffalo	209	Impala	86
Bushbok	9	Puku	27
Duiker	58	Oribi	5
Hartebeest	117	Reedbok	62
		Warthog	75
	<u>Total</u>	<u>648</u>	

E. Animals purchased/harvested and the corresponding success rates 1982
by Safari hunters only

TABLE 5

<u>Species</u>	<u>Purchased</u>	<u>Harvested</u>	<u>Success rate %</u>
Baboon	13	13	100
Buffalo	161	149	93
Bushbok	86	84	98
Bushpig	29	15	52
Crocodile	38	33	87
Duiker - Common	44	35	80
Duiker - blue	8	8	100
Duiker - yellow-backed	4	2	50
Eland	38	35	92
Grysbok	20	20	100
Hartebeest	100	85	85
Hyena	14	12	86

Jackal	10	10	100
Klipspringer	8	8	100
Kudu	65	65	100
Lechwe - black	22	22	100
Lechwe - Kafue	38	38	100
Hippo	43	43	100
Impala	177	139	79
Leopard	102	86	84
Lion	68	63	93
Oribi	50	44	88
Puku	122	122	100
Reedbok	59	59	100
Roan	30	30	100
Sable	66	66	100
Sitatunga	23	23	100
Tsessebe	8	8	100
Steinbok	2	-	-
Warthog	140	132	94
Waterbok	84	80	95
Wilddog	1	1	100
Wildebeest - blue	11	11	100
Wildebeest Cookson	63	63	100
Zebra	160	160	100
	<hr/>	<hr/>	
	1,907	1,764	
	<hr/>	<hr/>	

Source: National Parks and Wildlife Service

Note; These figures (Table 5) have at the time of reporting not yet been officially confirmed.

There are four safari companies operating at present in the country.

3. Conclusion

If the hunter (not applicable to personnel employed by the National Parks and Wildlife Service) can expect a fair share for the value of the skin originating from the animal shot there seems no logical reason why the skin/hide shall not be recovered, properly cured and brought to some known collection point where the hunter by producing the licence will be compensated for his hide/skin according to the quality of the flaying and preservation work carried out but also depending on the general appearance of the trophy (not all lions have a black mane). For the hunter it must be paying proposition to take more care of the skin.

The Wildlife Service personnel shall be provided with the necessary means (e.g. transport, salt, knives, bactericides like Reskol) enabling them to demonstrate in their own environment the proper preservation and handling of game skins.

The estimated value of hides and skins produced through the combined activities of the Wildlife Service (providing meat rations, control work) during 1982 can be calculated as follows:

TABLE 6

<u>Specie</u>	<u>Number</u>		<u>Price in ZK</u>			
			<u>raw</u> <u>p. unit</u>	<u>Total</u>	<u>finished</u> <u>p. unit</u>	<u>Total</u>
Elephant	121	29,040 sq.ft.	2.50	72,600	12	348,480
Hippo	82	8,200 sq.ft.	1.50	12,300	8	65,600
Buffalo	390		20	7,800	60	23,400
Crocodile	18		50	900	150	2,700
Impala	301		10	3,010	30	9,300

Warthog	248	5	1,240	15	3,720
Lekhwe	110	15	1,650	50	5,500
Duiker	22	2	44	10	220
Waterbeest	130	15	1,950	60	7,800
Hyena	1	30	30	120	120
Lion	8	400	3,200	1,000	8,000
Puku	88	20	1,760	80	6,400
Oribi	18	20	360	80	1,440
Reedbok	50	10	500	40	2,000
Sable	10	50	500	150	1,500
Roan	10	25	250	100	1,000
Kudu	10	15	150	80	800
Wildebeest	58	15	870	60	3,480
			109,114		491,460

NOTE: A medium sized elephant is expected to render about 240 sq. ft. of hide, a hippopotamus about 100 sq. ft.

If only 50% of the hides/skins would have been recovered and from those only 70% finally processed - considering at the beginning a reject rate of 30% - the value of tanned game skins and exotic leather would be in the region of K170,000 for year referred to.

With reference to non-safari hunters in GFA and open areas as well as hunting permits sold through the District Councils, the following estimates on the valuation of the hides/skins produced from these sources during 1982 are shown as per Table 7.

NOTE: As the related figures for the GMA covering the year 1982 are not readily available, figures of 1981 have been used for the compilation.

TABLE 7

<u>Specie</u>	<u>Number</u>	<u>Price in ZK</u>				
		<u>raw</u>		<u>finished</u>		
		<u>p. unit</u>	<u>Total</u>	<u>p. unit</u>	<u>Total</u>	
Baboon	17	20	340	50	850	
Buffalo	1,138	20	22,760	60	68,280	
Bushbok	238	10	2,380	30	7,140	
Bushpig	18	5	90	15	270	
Crocodile	43	50	2,150	150	6,450	
Duiker	238	2	476	10	2,380	
Eland	243	20	4,860	60	14,580	
Elephant	(159)	banned since 1981				
Grysbok	23	2	46	10	230	
Waterbeest	602	15	9,030	60	36,120	
Hippo	342	(34,200 sq. ft.)	150	51,300	8	273,600
Hyena	19	30	570	120	2,280	
Impala	542	10	5,420	30	16,260	
Jackal	7	10	70	30	210	
Kudu	99	15	1,485	80	7,920	
Lectwe	73	15	1,095	50	3,650	
Leopard	118	400	47,200	1,000	118,000	
Lion	122	400	48,800	1,000	122,000	
Oribi	78	20	1,560	80	6,240	

Puku	298	20	5,960	80	23,840
Reedbok	388	10	3,880	40	15,520
Roan	16	25	400	100	1,600
Sable	159	50	7,950	150	23,850
Sititunga	5	10	50	30	150
Warthog	617	5	3,085	15	9,255
Waterbok	201	25	5,025	100	20,100
Wildebeest	177	15	5,025	100	20,100
Sebra	300	200	60,000	600	180,000
			K 288,637		K 971,395

Table No. 7 reveals if only 50% of hides/skins are recovered and 70% of those skins actually reach the finish stage of processing, the value generated can be estimated as being around K400,000 for the period of 1982. Therefore, the potential of game hides/skins available in the country is justifying the minor capital outlays required for the rehabilitation of the existing facilities in Chilanga.

G. Cost of chemicals required to process:

a) Game skins with hair on

As it will be practically impossible to operate at the beginning in terms of production costs due to the large variety of game skins delivered in irregular quantities varying quality only a rough estimate can be given. Most of the tanning liquids are recycled or applied by hand to the skin and for this reason the

chemical uptake is minimal: for example, an impala skin will consume chemicals worth about K2.50 and a lion for approximately K12.00.

- i) Elephant/hippo hides into crust leather (undyed)
Approximately K1.40 is required worth of chemicals to process one square foot of elephant/hippo leather.
- ii) Crocodile skins
About K12.00 is needed to tan and finish one crocodile skin having a length of 2.0m.

V. CONSIDERATIONS CONCERNING THE LEGAL
ASPECTS FOR THE PROPOSED GAME SKIN
TANNERY

The legal structure of the required company to be formed shall provide the instrument to fulfill the needs for carrying out the activities in the field of hide/skin collection, tanning and marketing of the products manufactured.

To provide the necessary impetus to launch and operate such an undertaking effectively and economically the employment of private capital in the form of a shareholding participation shall be sought.

It can be reasonably expected that a joint venture of which, for example, 40% of the shares are owned by private investors and 60% by the Government through a Parastatal Organization will generate enough incentive and motivation for the private share holders to carry out the company's activities in a business-like manner.

It is suggested that the Ministry of Lands and Natural Resources through the National Parks and Wildlife Service shall be actively engaged to identify private investors interested in providing capital for the establishment of a game skin tannery for the proposed company. The following names for the envisaged company may seem appropriate and be considered:

Zambezi Game Industries	Ltd.
Exotic Hide and Skin Tannery	Ltd.
Hippo Tannery of Zambia	Ltd.
Simba Tannery of Zambia	Ltd.

VI. MARKETING OF TANNED HIDES AND SKINS

To cater for the country's growing tourist market and also to satisfy the desire of the diplomatic personnel to purchase some game products of their liking without being compelled to obtain in a time consuming and cumbersome procedure the documents necessary for the legal exportation of the trophies bought, the whole subject of the documentation must be reviewed.

A tourist, whose time is already programmed, can not be expected to waste his time in following the official channels to obtain all the permits required to possess and export for example a Duiker skin worth K25.

If the tourist is lucky he might have managed to obtain the permits within a week. Therefore it is recommended that those shops where game trophies can be bought shall be authorized in cooperation with the various government departments concerned, to issue with the trophy purchased all the permits required for the legal possession and exportation.

VII. SUGGESTED PLAN OF ACTION/RECOMMENDATIONS

1. Structuring of the company to meet all the requirements of a game skin tannery.
2. To purchase at source at least one railway truck (45 tons/900 bags) of common salt for immediate delivery to the Wildlife Service Headquarters in Chilanga.
3. Distribution of salt to the various camps and outposts in quantities considered by the Senior Officers of the Wildlife Service as sufficient (e.g. one raw elephant hide weighs 400 - 500 kg and requires up to 2 bags of salt for preservation).
4. Purchase of hand spray pumps and bactericides (RESKOL 64) - both available locally at Cooper's - for every camp and outpost including Chilanga. One spray pump and one 5 gal. container of RESKOL 64 will cover the initial needs per station.
5. Every camp and outpost shall be provided with at least three skinning knives.
6. When the actual hunting is exercised, the party involved shall be made responsible by the Senior Officer of the camp for the recovering and subsequent treatment of the skin or hide. Elephant and hippopotami hides shall be cut in panels at least two feet wide and as long as possible. Inner and outer elephant ears have to be carefully separated before they become dry. Curing of skins with hair on must be carried out straight after flaying therefore salt must be at hand. Elephant and hippo hides may be brought to the base camp for salting, however, on the same day.

7. After the hide/skins have been conveyed to the base camp, cleaning and resalting may become necessary. In any case, the outer layers of the skin shall be sprayed with bactericides (RESKOL).
8. Every camp should have its own symbol of identification (numbers) with which the trophy can be clearly marked (tags or feltpen) for later clarification at the final destination - the tannery. The original markings shall also contain the key for the identification of the skinner and curer - a bonus system might be considered.
9. To stimulate and facilitate the setting up of a practical game hide/skin collection system in areas not covered by the staff of the National Parks and Wildlife Service, a suitable mechanism to serve the trophy seller (in most cases the subsistence hunter) as well as the buying organization has to be worked out.
10. It has to be decided upon in which manner a rural hunter who delivers his trophy skin to a camp managed by the Wildlife Service can be contently compensated for his work; certainly the hunter should not be discouraged from bringing more skins by a cumbersome administrative system. To issue a credit slip deductible from the next hunting licence fee would be one possibility.

VIII. IMPLEMENTATION OF THE PROJECT

Phase one:

The Ministry of Lands and National Resources through the National Park and Wildlife Service will start with the game hide and skin collection throughout the National Parks and Game Management Areas. The trophies will be trans-

ported regularly to Chilanga for storage as from May, 1984. Concurrently the Game Skin Tanning Company will be formed and a market oriented concept for the collection and handling of game hides/skins will be worked out by the government.

Phase two:

At the end of the hunting season - November/December 1984, the accumulated stock of game hides/skins at Chilanga shall be professionally sorted and graded. The listed stock shall be offered - with the exception of some rare trophies - and sold to the international market. In February/March 1985 the revenues realized from the sales shall be in principle retained to finance phase three.

Phase three:

- Order of machinery and chemicals for the tannery (UNIDO would be pleased to assist technically) April, 1985
- Implementation of a revised and improved game skin collection system, May 1985
- Arrival of machinery and chemicals - September/October 1985
- Setting up of machinery and installation of equipment - October 1985
- Starting up of the game skin tanning operation - November 1985.

NOTE: For the last two stages of phase three international expertise through UNDP/UNIDO may be sought if required.



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
UNIDO

1 November 1983

PROJECT IN THE REPUBLIC OF ZAMBIA

JOB DESCRIPTION

(UF/ZAM/83/215)

(US/GLO/81/120/11-53)

Post title Game Skin Tanning Consultant

Duration 3 weeks.

Date required January 1984.

Duty station Lusaka with travel within the country as required.

Purpose of project To collect information on the availability of game hides and skins in various parts of the country and study the prospects of the establishment of a game skin tannery.

Duties The consultant is to be attached to the Ministry of Lands and Natural Resources and will, together with the Government counterpart who is familiar with wild life management, be expected to:

- a) Assess the quantity and quality of raw game hides and skins available and collect background information on the subject;
- b) Collect information and data on the tanning industry;
- c) Identify the most suitable location for the establishment of a game skins tannery and prepare estimates for the capital requirements covering building construction, equipment and operating expenses.
- d) Prepare a draft project document for the establishment of a suitably sized and equipped game hides and skins tannery;

The expert will also be expected to prepare a final report, setting out the findings of the mission and recommendations to the Government on further action which might be taken.

Applications and communications regarding this Job Description should be sent to:

Project Personnel Recruitment Section, Industrial Operations Division
UNIDO, VIENNA INTERNATIONAL CENTRE, P.O. Box 300, Vienna, Austria

Qualifications

The consultant should have extensive experience in the tanning industry, particularly in the preliminary treatment, tanning and finishing of elephant and hippo hides and crocodile skins. He should also be familiar with the hair-on processing of zebra, antelope and other similar game skins. He must be fully familiar with the planning of tanneries making plant lay-outs and selecting tannery equipment.

Language

English.

Background information

Zambia disposes of a large variety of wildlife; there is a considerable amount of game hides and skins available for collection but only a small proportion of it is processed and tanned. Through a continuous proper wildlife management and suitable measures to sustain a healthy and balanced game population, a steady source of hides and skins could be reasonably secured. With the exception of a few artisan types of curing/tanning establishments in rural areas, Zambia has no proper mechanized tanning facilities for game skins which, from a technical point of view, are considerably differing from the usual leather manufacturing units.

Under the projects ZAM/69/506 and ZAM/74/005, Development of Small-Scale Industry, a game skin tannery expert was fielded from 1973-1976. Owing to financial constraints faced by the Government counterpart agency (RUCOM) during the implementation of the project, the project results had only limited impact on the game skin tannery operation of the country.

The World Wildlife Fund estimates for the elephant population of Zambia amounted to 150,000 in 1979. Assuming a very modest off-take rate of 1% per year (the life expectancy of elephants is similar to mankind's), approximately 1,500 elephant hides should be available per annum. As an average-sized elephant renders about 300 sqft of hides and considering the relatively stable world market prices for elephant leather (US\$ 9-11 per sqft), it becomes obvious that this specific sector has a high development potential. The situation regarding hippopotami hides is very similar; the same applies for crocodile skins, all of which are plentiful in the southern part of the country. The establishment of a well designed game skin tannery would allow to increase the value of a substantial part of the exotic leather and skins available by utilizing it for the production of attractive leather goods for the growing tourist trade and the international market. In addition, the establishment of such tannery would have a positive impact on the employment sector as well as foreign currency earnings.

Hippopotamus population trends for Nsefu and
Lusangazi on the Luangwa River

<u>Year</u>	<u>Nsefu</u>	<u>Lusangazi</u>
1955	358	-
1956	380	-
1957	409	-
1958	438	-
1963	-	1,100
1964	600	1,290
1968	620	1,345
1970	1,542	1,270
1971	-	1,560
1972	3,755	1,164
1973	-	1,311
1974	-	1,871
1975	1,208	1,134
1976	3,076	1,425
1977	3,403	1,744
1978	3,095	1,670
1979	3,260	1,891
1981	3,251	1,633
1982	4,211	2,086

TOTAL 6,297

