STATUS REPORT

ON

LEATHER, FOOTWEAR, LEATHER GOODS AND SPORTS GOODS INDUSTRIES

OF

ASSAM STATE

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PREPARED BY
LEATHER FOOTWEAR DIVISION
OF
SMALL INDUSTRIES SERVICE INSTITUTE
BAMUNIMAIDAM
GUWAHATI-781 021
(ASSAM)

SIDO ACTION PLAN 1998-99

CONTENT

ASSAM AT A GLANCE

1.1 STATE CAPITAL : Dispur (Guwahati)

1.2 GEOGRAPHIC LOCATION

i)	Latitude	24^0 48′ and 27^0 09′ North
ii)	Longitude	89^0 82′ and 96^0 10′ East

1.3 AREA & ADMINISTRATIVE SET-UP

i)	Area (1991 Census)	78,438 Sq. Km.
ii)	District	23 Nos.
iii)	Sub-divisions (as on December,1995)	48 Nos.
iv)	Revenue Circles (1991Census)	149 Nos.
v)	Community Blocks (As on 31-3-96)	218 Nos.
vi)	Mahkuma Praised (As on 31-3-96)	43 Nos.
vii)	Police Station	222 Nos.
viii)	Towns	93 Nos.

1.4 POPULATION (AS PER 1991 CENSUS)

i)	Total Population	22,414,322 Nos.	
Ii)	Male	11,657,989 Nos.	
iii)	Female	10,756.333 Nos.	
iv)	Density on population	286 Person per Sq. Km.	
v)	Literacy rate	53.42 %	
	a)	Male	61%
	b)	Female	39%
vi)	Number of educated unemployed youth	8,74,138 Nos. (As on 31-3-93)	

1.5 SEX RATIO: 925
(Female per thousand male)

1.6 LIVE STOCK & VETERINARY (1994 Census)

TOTAL LIVE STOCK (,000 Nos.): 25,932		
i)	Cattle (,000 Nos.)	7,785
ii)	Buffaloes	651
iii)	Sheep	77
iv)	Goat	2,644
v)	Horse & Ponies	14
vi)	Pigs	828
vii)	Fowl	10,087
viii)	Duck	3,846

1.7 EDUCATION & TRAINING FACILITIES (1993-94)

i)	Universities	5 Nos.
ii)	Medical college	3 Nos.
iii)	Engineering college	4 Nos. (Including I I T)
iv)	Veterinary college	2 Nos.
v)	Ayurvedic college	1 No.
vi)	Nursing college	2 Nos.
vii)	Dental college	1 No.
viii)	Law college	9 No.
ix)	Homeopathic college	1 No.
x)	Art, Science & commerce college	231 Nos.
xi)	Polytechnic	9 Nos.
xii)	Higher secondary school	502 Nos.
xiii)	High school	3,072 Nos.
xiv)	Primary junior basic school	29,358 Nos.
xv)	I T I / Craft school	27 Nos.

1.8 (A) EMPLOYMENT IN PRIVATE & PUBLIC SECTOR IN ASSAM (As on December,1995)

a)	**PUBLIC SECTOR (Total)**	**5,35,993 Nos.**
i)	Central Govt.	83,203 Nos.
ii)	State Govt.	3,01,738 Nos.
iii)	Central Quasi Govt.	78,311 Nos.
iv)	Local Bodies	59,719 Nos.

b)	**PRIVATE SECTOR (TOTAL)**	**5,76,808 Nos.**
i)	Large establishment	5,67,605 Nos.(Employing 25 or more workers)
ii)	Smaller establishment	9,203 Nos.

1.8(B) EDUCATED APPLICANT BY LEVEL OF EDUCATION REGISTRATION & NUMBERS in the live register in Assam: (1995)

i)	Engineering graduates	2,100 Nos.
ii)	Medical graduates	23 Nos.
iii)	Agriculture graduates	609 Nos.
iv)	Veterinary graduates	30 Nos.
v)	I. T.I. trainees	16,084 Nos.
vi)	Post graduates	4,782 Nos.
vii)	Graduates	72, 844 Nos.
viii)	H.S.S.L.C / P.U / Intermediates etc.	2,08,601 Nos.
ix)	Matriculates / H.S.L.C	4,49,899 Nos.
x)	Diploma holders (Engineering.)	5,421 Nos.

1.9 ROADS, TRANSPORTS & COMMUNICATION : (1993-94)

i)	P.W.D. road	32,154 Km.
ii)	State highway	2,080 Km.
iii)	National highway	2,033 Km.
iv)	Railway route	Available
v)	Air Port	6 Nos.

2. 0 BANKING & CO-OPERATIVE SOCIETIES (1994)

i)	Number of branches of scheduled commercial bank	1,228 Nos.
ii)	Registered co-operative societies	4,916 Nos.
iii)	Number of co-operative bank	5 Nos.

2.1 INDUSTRIES

i)	Large & medium scale industries	70 Nos.
ii)	Registered S.S.I. units (Up to 31-12-95)	28,375 Nos.
	Number of industrial sheds in industrial estates(As on 1995-96)	289 Nos.
iv)	Total numbers of sheds functioning	180 Nos.
	Number of growth centres of Assam industrial Department	6 Nos.
v)	Name of the major, medium & SSI Jute, Textile, Plywood Polyester, Match box industries etc.	Petroleum, Tea, Fertilizer,

2.2 S.I.S.I 's and D.I.C's

(i)	Number of Small Industries Service Institute in Assam	One
(ii)	Number of Branch Small Industries service Institute in Assam	Six
(iii)	Number of District Industries Centres Industries in Assam.	Twenty three

CHAPTER - I

SUMMARY

The task of preparing a status report in respect of Leather, Footwear, Leather goods and Sports goods Industries of the entire state was assigned by the office of the development commissioner (Small scale Industries), New-Delhi, under the action plan 1998-99 for the Leather / Footwear Division of Small Industries Service Industries, Guwahati. An attempt has been made through this report to study the present position and prospective future growth of leather, footwear, leather goods and sports goods industries in the state of Assam. The report tries to give an over all view of these industries and investigates their possible growth in this state. An attempt has also been made to focus the states of raw materials, machinery, chemical, manpower, technology requirements, for leather, footwear, leather goods and sports goods industries. The study on existing as well as the future market has been included in this report, which will be useful for the existing as well as prospective entrepreneurs of the region. The problem faced by the local entrepreneurs along with the suggestions regarding these problems have been included in this report which will be beneficial to the existing as well as the prospective entrepreneurs of the Assam and also to the policy makers to formulate suitable policies for the growth of leather, footwear, leather goods and sports goods industries in the state of Assam.

The brief status report contemplates to focus the health of the leather and leather based industries of the Assam state. By looking into various technical and economic aspects, the future growth potential of these type of the industries have also been dealt with in this report. For the benefit of those entrepreneurs who are planing to set-up a leather and leather based industries in the near future we have given it a scientific outlook.

CHAPTER - II

INTRODUCTION

Assam the most important among the seven states of the North eastern region of India is located between 24^0 48' and 27^0 09' north latitude and 89^0 82' and 96^0 10' east latitude occupying an area of 78,438 Sq. Km.. It is bounded by Bhutan and Arunachal Pradesh on the north and by Nagaland, Meghalaya & Mizoram on the south. The state is bordered by Arunachal Pradesh, Nagaland & Manipur on the east and Tripura, West Bengal & Bangladesh on the west.

According to the 1991 population census the total population of Assam is 2,24,14,322 as against 1.46 crores as per 1971 census. The density of population work out to be 286 persons per Sq. Km.. The literacy rate of the state is 53.42 %.

Physically the state has been divided in to two divisions namely Assam hills division and Assam plain division. The plain division consists of Brahamputra valley and Barak valley. At present, there are 23 districts in the state with 48 subdivisions. The state enjoys a moderate climate with hot and humid summer and generally cold winter. The state enjoys a fairly long monsoon period, which starts from May and lasts till end of September. Agriculture is the main source of livelihood for the people of the state as 76% of total population of the state is engaged in agriculture and allied activities. In fact 50% of net income of the state comes from the agriculture. The main agriculture produce of the state are paddy, wheat, cotton, jute, mustard, tabacco, supari, potato, oilseed, pulses, vegetables etc. The major horticulture produce of the state are orange, aeronaut, coconut, pineapple, mango, jack fruit etc.

The economy of the state is mainly based on agriculture, petroleum oil, and minerals. Assam has a very good population of livestock. The following table shows the district wise livestock population of Assam.

TABLE- 2.1

DISTRICT WISE LIVESTOCK POPULATION OF ASSAM (1994)

District	Cattle	Buffalo	Sheep	Goat	Pigs	Horse & Ponies
1	**2**	**3**	**4**	**5**	**6**	**7**
1. Goalpara	1,98,611	11,876	2,645	64,917	15,026	27
2. Kokrajhar	3,46,281	22,086	5,796	1,07,241	60,492	138
3. Dhubri	3,77,116	53,037	12,271	1,21,454	18,137	187
4. Barpeta	3,63,402	14,760	6,162	1,61,884	16,970	21
5. Bongaigaon	1,37,622	11,071	4,332	46,137	8,269	77
6. Nalbari	3,02,370	6,078	3,398	1,44,908	31,991	144
7. Kamrup	5,31,989	6,956	5,215	1,84,628	42,455	543
8. Morigaon	3,11,787	12,646	3,949	84,363	27,312	521
9. Nagaon	5,37,144	23,931	1,528	1,49,497	25,555	1,897
10.Darrang	3,80,124	34,463	6,409	1,40,155	36,093	492
11. Sonitpur	3,82,611	29,360	5,298	2.08,428	38,969	446
12.Golaghat	4,56,675	33,868	309	1,39,780	45,929	415
13. Jorhat	3,45,506	36,745	547	92,781	43,115	2,224
14. Sibsagar	4,69,155	44,486	633	1,63,655	54,302	1,902
15. Dhemaji	2,83,191	41,332	2,151	72,613	54,949	1,387
16. Lakhimpur	3,59,863	32,839	243	71,218	51,185	1,731
17. Dibrugarh	3,04,608	20,304	657	1,09,946	29,996	811
18. Tinsukia	4,08,253	27,591	850	88,141	38,192	241
19. Karbianglong	3,63,601	55,122	935	1,31,757	1,10,568	662
20. N. C. Hills	52,786	27,097	70	22,754	39,605	18
21. Cachar	4,27,424	46,267	5,600	1,56,666	25,393	131
22. Hailakandi	1,60,692	27,626	2,491	78,323	6,865	4
23. Karimganj	2,75,906	32,278	5,915	1,03,458	7,168	51
Assam Total	**77,85,717**	**6,51,819**	**77,404**	**26,44,704**	**8,58,536**	**14,070**

From the Table 2.1 it is clear that the figure of cattle, buffalo, goat and pigs are prominent among the livestock. As per 1988 livestock population census the figure for cattle, buffalo sheep, goat, pigs, and horses & ponies were 72.77 lakhs, 6.23 lakhs, 0.67 lakhs, 21.34 lakhs, 6.42 lakhs and 0.13 lakhs respectively. Thus it is observed that the livestock population of the state is increasing from the year 1988. Cattle population is comparatively mere in Nagaon, Kamrup, Sibsagar and Golaghat districts and the goat population is comparatively more in Sonitpur, Kamrup, Sibsagar and Barpeta districts of Assam. The average size of cattle hide in the state is between 18–24 Sq. ft. The average goat skin size varies from 4-6 Sq. ft.and that of buffalo hide is between 22-28 Sq. ft. Central Leather Research Institute, Chennai had conducted a survey in 1978.

The approximate number of animals slaughtered annually in the state as per the servey is given below.

TABLE- 2.2

APPROXIMATE NUMBER OF ANIMALS SLAUGHTERED ANNUALLY IN ASSAM

S. No.	Animal	Numbers
1.	Cattle	6,89,000 Nos.
2.	Buffalo	82,000 Nos.
3.	Goat / Sheep	14,35,000 Nos.

Source : Central Leather Research Institute, Chennai : Survey – 1978.

The same survey reveals the extent of effective recovery of the hides & skins of the state which is given below in the Table : 2.3

TABLE- 2.3

ANNUAL EFFECTIVE RECOVERY OF HIDES & SKINS OF SLAUGHTERED ANIMALS

S. No.	Animals	No. of animals slaughtered	Extent of effective recovery	Extent of lose due to non recovery
1.	Cattle	6,89,000 Nos.	6,32,000 Nos.	57,000 Nos.
2.	Buffalo	82,000 Nos.	78,000 Nos.	4,000 Nos.
3.	Goat & Sheep	1,43,500 Nos.	1,22,900 Nos.	20,600 Nos.

Source : Central Leather Research Institute, Chennai : Survey – 1978

From the above Table it is observed that a sizeable portion of the hides & skins are not recovered for processing further into finished leather. The main reason that can be listed for this lose are as under:

1) Food habit of a section of population consuming hides & skins along with meat.
2) Practice of a section of butchers to cut hides & skins along with meat in order to make the customers believe that the meat is fresh.
3) Unattractive price offered by the rawhides & skins agents in the interior places.
4) Inadequate number of rawhides & skins collecting agents.
5) Ignorance about the value of the rawhides & skins of the people.
6) Lack of proper and scientific flaying & carcass recovery facilities.
7) Social sigma attached to the practice.
8) Local sentiment etc.

Leather & leather based industries, being labour intensive offers a very good potential for employment generation. At present in our country about 14.5 lakh people employed in leather, footwear & leather goods industries. Leather & leather based industries in India are in large, medium, small scale sector, tiny and village sector.

In Assam there are 63 Nos. leather, footwear, leather goods and sports goods small scale industries registered with different District Industries Centres of the state. Out of these 63 SSI, 11 units, 36 units, 18 units, and 4 units are in the field of leather tanning / processing, footwear manufacturing, leather goods manufacturing and sports goods units respectively.

The Table 2.4 given below shows the number of leather, footwear, leather goods and sports goods small scale industries registered in different District Industries centres of Assam.

TABLE- 2.4

DISTRICT WISE NUMBER OF LEATHER & LEATHER BAESD INDUSTRIES OF ASSAM

S.No.	District	No. Of Units				Total no. of Units
		Leather	Footwear	Leather goods	Sports goods	
1	**2**	**3**	**4**	**5**	**6**	**7**
1.	Barpeta	1	-	1	-	2
2.	Bongaigaon	-	-	-	-	-
3.	Cachar	-	3	1	-	4
4.	Darrang	-	2	-	-	2
5.	Dhubri	6	2	-	-	8
6.	Dhemaji	-	-	-	-	-
7.	Dibrugarh	-	3	2	-	4
8.	Goalpara	-	-	-	-	-
9.	Golaghat	-	-	-	-	-
10.	Hailakandi	-	-	-	-	-
11.	Jorhat	-	-	-	1	1
12.	Kamrup	1	9	8	2	15
13.	Karbi-Anglong	-	-	-	-	-
14.	Karimganj	-	1	-	-	1
15.	Kokarajhar	-	-	-	-	-
16.	Morigaon	-	-	-	-	-
17.	Nagaon	1	5	-	-	6
18.	Nalbari	-	4	-	-	4
19.	N. C. Hills	-	2	-	-	2
20.	North Lakhimpur	2	1	-	-	3
21.	Sibsagar	-	-	1	1	2
22.	Sonitpur	-	1	1	-	2
23.	Tinsukia	-	3	4	-	7
Total	**Assam**	**11**	**36**	**18**	**4**	**63**

From the Table number 2.4 it is clear that there is no registered leather, footwear, leather goods and sports goods small scale industries in Bongaigaon, Dhemaji, Goalpara, Hailakandi, Golaghat, Karbi-anglong, Kokarajhar and Morigaon districts. There are 23 district in Assam and out of these only 15 districts have 63 number of registered leather, footwear, leather goods and sports goods small scale industries. Among these 63 industries, 11 are leather tanning / processing industries, 36 are footwear, 18 are leather goods and 4 small-scale industries are sports goods industries.

The total investment in plant & machinery of these units is Rs. 102.80 lakh and number of employment generated by them is 343. The district wise information on number of units, investment in plant & machinery and employment generated is given in “Directory on leather, footwear, leather goods and sports goods industries” of the Assam, which is annexed with this status report.

Leather and leather based industries have not developed to the extent desire in Assam and for that matter in whole of North Eastern Region. There is no leather & leather based industries in the Assam state in the large & medium scale sector. All the leather and leather related industries in this state are confined mainly to cottage, tiny and small-scale sector. The present annual production of hides & skins are estimated to around 15,256,000sq.ft. for the Assam. The opportunity of development of leather based small-scale industry in Assam on the basis of availability of raw material and demand in North Eastern Region are as follows:

a) Leather processing / Tanning.
b) Footwear manufacturing (Mainly chappals & sandals).
c) Leather goods manufacturing.
d) Rexene / Canvas / Synthetic cloth items.
e) Bone, Meat and
f) Pig hair brush etc.

The present report discusses in details the technical aspects of leather, footwear, and leather goods manufacturing processes, practices adopted by local entrepreneurs and the present status of leather and leather based industries in the state.

CHAPTER - III

INFRASTRUCTURE

The availability of right infrastructure plays vital role in the development of industries in any area. This chapter envisages discussing the availability of different infrastructure for the development of leather and leather based industries in Assam.

3.1 INDUSTRIAL SCENARIO

In Assam, there are 70 large & medium scale industries, 28,375 registered small-scale units (up to 31-12-95), 6 growth centres, and 289 numbers of industrial sheds in industrial estates (As per 1995-96). Out of these 289 industrial sheds, units in only 180 sheds are functioning.

The major large, medium and small-scale industries are petroleum, tea, fertilizer, jute, textile, plywood, polyester, paper and match box basis. The concentration of leather based industry compared to other industries is not remarkable. The reasons for the low growth of leather based industry in the state has been discussed in subsequent chapter of the report.

3.2 RAW MATERIAL

The total population of cattle, buffalo, goat and sheep in the Assam is given in the Table 3.1 below along with the availability of raw hides & skins.

TABLE- 3.1

LIVE STOCK POPULATION IN RESPECT OF ASSAM STATE

Sl. No.	Name	Number of population
1.	Cattle	77,85,717
2.	Buffalo	6,51,819
3.	Sheep	77,404
4.	Goat	26,44,704

Source : Directorate Of Animal Husbandry & Veterinary.(Livestock Census 1994).

TABLE- 3.2

PRODUCTION ESTIMATE OF HIDES & SKINS IN ASSAM (IN LAKH PIECES)

Cattle	4.34 Lakh
Buffalo	0.53 Lakh
Goat & Sheep	10.10 Lakh

Source: Status report on flaying and carcass recovery system – 1995-96, S.I.S.I; Guwahati.
The average size of cattle hides in this region varies from 18-24 sq. ft. and that of buffalo hides is between 22-28 sq. ft. The average size of goat skins of the region is between 4-6 sq. ft. The data regarding availability of raw material reveals that a sizeable portion of the hides & skins are not utilized for further processing due to the varies reasons which have been discussed earlier in Chapter – II.

3.3 MACHINERY

Neither machinery nor other allied tools & equipment for the tanning and curing of the hides & skins is available, nor manufactured locally. The footwear and leather goods machinery manufacturer is also not available in Assam. However some footwear, leather goods machinery and tools & equipment are supplied by a Guwahati based machine supplier on requisition. These machines are such as Industrial sewing machine, Combined finishing machine, Skiving machine, sole press machine, and tools & equipment etc. The Guwahati based footwear and leather goods machinery supplier may render his services on request.

3.4 CHEMICAL

The tanning procedure of hides & skins requires a large variety of chemicals. The chemicals required for the manufacture of leather, footwear and leather goods industries are not locally available. Some entrepreneurs, who were running this type of industries, are facing this problem and therefore they have to procure these chemicals from the far away states like West Bengal, Utter Pradesh, Tamilnadu, Maharastra, Punjab etc.

3.5 MAN POWER

In Assam there is a scarcity of skilled manpower for tanning industry. The manpower requirement for the footwear and leather goods industry is very high but is not readily available. The manpower presently engaged in footwear, leather goods industries and hides & skins collection are utilizing their traditional skill, which needs to be updated for the improving productivity and quality of the products manufactured.

Thus it is observed that the infrastructure available at present for the leather and leather based industries in Assam is not very encouraging, and a lot needs to be done before these industries develop well in this region.

The National Small Industries Corporation (N.S.I.C.) and Assam Science, Technology and Environment Council (A.S.T.E.C) are putting in their efforts to generate trained manpower for footwear & leather goods industries. These organisations have started six-month training courses on footwear & leather goods manufacturing.

CHAPTER - IV

PROCESS OF LEATHER MANUFACTURE

Since time immemorial man has been utilizing raw hides & skins to protect him from extremities of weather. As the civilization progressed he learnt the techniques of preserving these putricible hides & skins in to leather by use of various vegetable tanning materials. Over the years with development of science and technology, the manufacture of leather from raw hides & skins by crude method has change to a state of art and technology by using sophisticated machinery and modern chemicals. The following lines describe briefly the process involved in chrome leather manufacture.

4.1 SOAKING

Raw hides & skins in wet or dry salted conditions are brought for soaking after sorting into different grades, sizes and quality. The main objective of soaking is to re hydrate the 'cured' hides & skins to 'green' condition and also to remove salt, dung, dirt, blood etc. adhering to the hides & skins. Normally soaking is done overnight with 2-3 change of water with addition of small quantity of wetting agent and preservative.

4.2 LIMING

Liming is done with an intention to remove hairs from the hides & skins, to remove fatty substances present in the hides & skins as lime soap and also to ensure swelling and plumping of protein fibres present in the hides & skins, proper penetration of pre-tanning , tanning and post tanning chemicals into the leather in subsequent operations. As lime alone is not sufficient to remove hairs, some sharpening agent like sodium sulphide, old lime liquor etc. are added to achieve the desire result. Instead of longer liming practice followed earlier, modern tanners prefer to follow the practice of short and sharp liming by using drums and paddles instead of liming in pits.

After liming the hides & skins are called pelts. The pelts are then unhaired, fleshed and scud mechanically to obtain a clean pelt. Then the pelts are weighed and the pelt weight is noted. The subsequent addition of chemicals up to the tanning stage is based on this pelt weight.

4.3 DELIMING

This operation is carried to remove the alkali introduced during the liming operation and to bring down the swelling and plumping of pelt to the desired level. In order to remove the free lime from pelts, the pelts are washed in drums with running water for 15-30 minutes. Lime fixed in the pelt is removed chemically by using weak acids/ acid salts. The operation is carried out for about one hour in drum and after the desired level of de-liming is achieved, the next operation i. e. bating is carried out in the same bath.

4.4 BATING

Bating is generally is done for goat skins and soft leathers using enzymes. The main objective of batting is to obtain a smooth and silky grain of the final leather, which will be soft and pliable. For proper bating, temperature, float and duration of bating are very important. After bating pelts are washed in running water for 10-15 minutes.

4.5 PICKLING

Pickling is done with the help of salt and acids to bring the pelts in to proper P^H condition for chrome tanning operation. The acid also ensures a certain degree of splitting of fibre bundles. Salt is added to prevent acid swelling. The proper P^H condition of the pelt for chrome tanning is ascertained when the P^H of the cross section of the pelt below 3.0.

4.6 CHROME TANNING

The process of conversion of putricible hides & skins in to imputricible leather by the use of different chemicals is called tanning. Tanning done with vegetable tanning materials like Babul, Wattle, myrabolan, etc. is called vegetable tanning and tanning done with chemicals like Chromium, Zirconium or Alum is called mineral tanning.

Of late chrome tanning has gained tremendous popularity because by using basic chromium sulphate the tanning time is considerably reduced and the resultant leather is very light in weight and has got very good water proofing properties as compared to vegetable tanned leather. 33% basic chromium sulphate is used for chrome tanning and once the complete penetration of basic chromium sulphate is achieved the goods are besified with water and mild alkalies. After proper basification leather are washed and piled over night. Leather are then sammed in sammying machine to reduce the water content of the leather, so as to bring it to the right condition for splitting and shaving operations. Splitting is done for heavy leather in splitting machine to reduce the thickness of the leather. The top layer is called grain split and the bottom layer is called flesh split. The grain split is taken for processing in to high quality leather and the flesh split is processed for cheep variety of leather. Grain split or light leathers from the goat and sheep skins are taken for shaving in shaving machine to get the exact thickness of the finished leather. The shaved weight of leather is noted and the subsequent addition of chemicals for post tanning operations will be based on this shaved weight.

4.7 NEUTRALIZATION

Shaved leathers are washed in running water to remove free acid present in leather. Neutrilization is carried out to remove the combined acid in leather by using mild alkalies and other auxiliaries so as to bring the leather to the right P^H condition by removing excess positive charge for subsequent processes. Free acid and acid salts thus liberated after neutrilization are removed by washing the leathers alternately in hot and cold water.

4.8 RETANNING

A single tannage whether it is mineral or vegetable tannage can not impart all the requisite properties in leathers. Therefore in order to impart the requisite properties in leather, leathers are re-tanned using other minerals, vegetable and other synthetic tanning materials.

4.9 DYEING

Leathers have a particular colour after particular type of tanning. For example, the colour of chrome tanned leather is greenish blue and that of vegetable tanned leather is light brown or biscuit colour. In order to impart the desired shade to leather enhancing its looks and value leathers are dyed using dyestuff.

4.10 FAT LIQUOR

This operation is carried out by using oil in emulsion in order to lubricate the leather there by making it soft and waterproof to certain extent. Oil used for this purpose can be of vegetable, animal or synthetic origin.

Leathers after dying and fat liquoring are sammed to remove excess moistures and set to have a smooth grain and to remove wrinkles. Leathers are than dried, conditioned and staked to obtain soft leather. The next operation is to trim the leather to a proper shape. Then buffing operation is carried out to remove excess flesh adhered to the flesh side of the leather. Leathers than toggled or nailed to remove stretchiness. Then the leathers are taken for finishing.

4.11 FINISHING

Leathers are finished in order to enhance the aesthetic appearance and also to cover the natural and other defects present in leather like scratch mark, pox mark, flay cuts, bacterial damage etc. The finishing operation makes the leather water repellant to certain extent. Leather finishing can be classified in to two categories as per the medium of finishing used. When water is used then finishing is called aqueous finish and if solvent is used, it is called non-aqueous finish. Aqueous finish is further sub-divided protein finish and resin finish. Protein finish is generally given for high quality leathers using protein binder, dye solution, wax emulsion and little quantity of organic pigment, if necessary. For fixing the finish to the leather, the leathers are finally sprayed with a solution of formaldehyde and water and to give gloss to the finished leather. Leather is glazed on glazing machine. To enhance the market value of slightly defective leathers, these are resin finished using pigment dye solution, if necessary resin binder, protein binder, wax emulsion, penetrator etc. Leathers are top coated with a liquor emulsion to give a glossy appearance and to make it water proof.

Finally leathers are either ironed or plain plated and measured in measuring machine and then sorted to different grades.

CHAPTER - V

PROCESS OF MANUFACTURE FOR FOOTWEAR & LEATHER GOODS

The steps involved in the manufacture of footwear & leather goods are described below. Even though footwear & leather goods are two different items, some of the steps are common in the manufacture of both these items.

5.1 DESIGNING

The first step involved in the manufacture of footwear & leather goods is designing.
The item, to be manufacture is designed as per the choice of the buyers or as per the market demand. The different patterns for different sizes are made and the total requirement of raw material for a particular item is estimated.

5.2 SELECTION OF THE RAW MATERIAL

The raw materials procured from the market are selected and sorted as per the quality into different grades. Different grades of raw materials are taken for manufacture of different components of various articles. For example, butt portion of leather is used for making the vamp component of shoe ; belly portion of leather can be used for quarter component. Slightly defective portion may be utilized for tongue component etc. The main aim of selection of raw materials is to obtain optimum use of expensive raw material and thereby avoiding wastage and reducing the cost of production.

5.3 CLICKING

Clicking or cutting is carried out to cut different components of footwear or leather goods as per the approved design or size. While clicking, it must be ensured to click the right component from the right area of the leather. Vamp of footwear is to be clicked from the butt portion of the leather. Defected portion of leather should be carefully clicked so that the defective portion does not spoil the appearance of the finished product. Lining material are also clicked in this section. Clicking can be carried out mechanically using clicking press and also manually using clicking knives. The former method is recommended, when the production is carried out at a large quantity only.

5.4 STAMPING AND EMBOSSING

After clicking, different components are stamped or embossed as per design number, size number, lot and serial number in stamping and embossing machine in order to avoid mixing of different components and also to avoid confusion in later stages of production. Trademarks can also be embossed in this machine.

5.5 SKIVING

During this operation the thickness of certain edge of leather are reduced by the help of skiving machine / skiving knife (Raimpee) to allow seams to be produced without the bulkiness. This operation also ensures a uniform thickness to each edge of the item produced. In case of footwear components edge skiving will avoid discomfort during wear besides the above advantages.

5.6 PUNCHING AND EYELETTING

Punching and eyeletting is done in case of footwear mainly to punch holes and to fix eyelets for inserting shoe laces. The eyelets prevent the damage of hole, while tightening the laces. Besides this utility value, punching and eyeletting are also done both in footwear and leather goods for decoration purpose. Punching and eyeletting can be done either by machine or by hand tools.

5.7 PERFORATING

Sometimes a series of small perforations of different sizes or shapes along the edges are made in shoes and leather goods for decoration purpose to give the finished article a pleasing look. Besides the aesthetic aspect, perforation is also done to cover certain defects in the finished leather and thereby enhancing the market value of the article. Perforation is generally done by hand.

5.8 CLOSING

Different components of upper for footwear and leather goods are assembled and joined together in this operation. Closing is done by stitching and pasting, and in few cases of specially designed articles closing is carried out only by pasting. Stitching can be done by industrial sewing machines. Pasting is generally done with synthetic adhesives.

5.9 LASTING

This operation is carried out only for footwear. In this operation two-dimensional leather is given a three dimensional shape to fit the shape of the foot and to retain this shape for rest of life of the shoe. The closed uppers are mounted over the last and fixed by either adhesives or by tacks. The last are generally made of wood or plastic. Lasting can be done by hand or by the help of lasting machines viz. fore part lasting machine and sheet part lasting machine.

5.10 SOLE ATTACHMENT

The lasted margin of the leather upper and the inner side of the leather sole / rubber sheet sole (not P.V.C., P.U., T.P.R., sole) are first roughened for better adhesive penetration. The P.V.C., P.U., T.P.R., sole are cleaned by Methyl Ethyl Ketone (M.E.K.) or other relevant chemicals, instead of roughening for better adhesive penetration and to ensure a strong bondage between the sole and the upper. Adhesive is applied to the lasted margin, bottom of the lasted upper and inside of the sole. Then the adhesive is allowed to dry, and a second coat of adhesive is applied to the same side if required, and allowed to dry. After that the applied adhesive is reactivated by heat to create stickiness in case of P.U. based adhesives. Both the upper and sole are pressed together at cementing press. After proper adhesion is achieved the last removed and the shoes are taken for finishing. Soles can also be directly attached to the upper either by injection molding or by direct molding processes.

5.11 FINISHING

Finishing is done to enhance the aesthetic look of footwear and leather goods by covering the defects that might have occurred during long production process and handling during the operation thereby increasing the market value of the product. In this process finally the goods are polished to give a shining appearance.

After the finishing operation the goods are finally inspected, packed properly and kept ready for dispatch to the market.

CHAPTER - VI

ENVIRONMENTAL MANAGEMENT IN INDIAN LEATHER INDUSTRY

6.1 INTRODUCTION

Indian leather Industries comprising of about 2,500 tanneries is one of the oldest and very fast growing industries with an annual estimated capacity of processing 6,00,000 tons of hides and skins. The total water discharge from these tanneries is about 120,000 cubic meter per day and most of these discharged water is untreated. Waste management in tanneries has become a matter of growing concern in our country. The main constraints for setting up effluent treatment plat for tanneries are (1) Seasonal and daily variation in quality and quantity of discharged effluent, (2) Selection of appropriate technology for it's treatment, (3) Finance required for this purpose, (4) High land requirement, (5) High recurring operational cost etc.

Large and medium scale isolated tanneries with sufficient land and finance have set-up independent treatment plants. Small-scale tanneries located in cluster with insufficient land and capital can pool in their resources and set-up common effluent treatment plant.

In India leather are manufactured generally from goat, sheep skins; cow and buffalo hides. The tanning methods followed by these tanneries are either vegetable or chrome tanning processes. Due to the huge water requirement, these tanneries are located near the riverbanks. In North India these are located near the Ganga and in South these are located near Polar river bank. The volume and characteristics of effluent discharged vary from process to process, tannery to tannery and time to time.

6.2 POLUTION CONTROL STANDARDS

Wastewater from lime yard is alkaline in nature and contains decomposable organic matters, hairs, limes, suspended and dissolved impurities, sulphide etc. The B.O.D. is high of the range between 2,000 – 5,000 mg/cubic ft. Wastewater from tanning yard is acidic and colored. Wastewater from vegetable tanning industry contains highly polluting organic matters. It is estimated that in India around 15,000 tons of basic chromium sulphate is discharged annually as waste.

The table below shows the average pollution load in tannery effluent per ton of hides and skins processed.

TABLE- 6.1

AVERAGE POLLUTION LOAD IN TANNERY EFFLUENT PER TONNES OF HIDES / SKINS PROCESSED

Sl. No.	Pollution parameter	Pollution load in kgs.
	B.O.S. 5 Days @ 20 ^{o}C	70
	C.O.D.	180
	Chlorides	270
	Dissolved solids	600
	Suspended solids	100
	Sulphides	4
	Total chromium	30

Table 6.2 below gives the tolerance limits for tannery effluents as per Bureau Of Indian Standards.

TABLE- 6.2

TOLERANCE LIMITS FOR TANNERY EFFLUENTS AS PER B.I.S.

Characteristics	Tolerance limits for	Industrial effluents	Discharged
	Into Inland surface water	Into public severs	On land for Irrigation
Colour & odour	Absent	--	Absent
PH	6.0 – 9.0	6.0 – 9.0	6.0 –9.0
Suspended solids	100 mg / ltr.	600 mg / ltr.	200 mg / ltr.
B.O.D. 5 days @ 20%	30 mg./ ltr.	350 mg / ltr.	100 mg / ltr.
C.O.D.	250 mg./ ltr.	--	--
Total dissolved solids	2100 mg./ ltr.	2100 mg./ ltr.	2100 mg./ ltr.
Chlorides	1000 mg./ ltr.	1000 mg./ ltr.	600 mg./ ltr.
Total chromium	2 mg./ ltr.	2 mg./ ltr.	2 mg./ ltr.
Heravalent chromium	0.1 mg./ ltr.	0.1 mg./ ltr.	0.1 mg./ ltr.
Sulphide	2 mg./ ltr.	2 mg./ ltr.	2 mg./ ltr.
Sodium	--	60%	60%
Boson	2 mg./ ltr.	2 mg./ ltr.	2 mg./ ltr.
Oil & Grease	10 mg./ ltr.	20 mg./ ltr.	10 mg./ ltr.

6.3 EFFLUENT MANAGEMENT

For the purpose of effluent management, tanneries in India can be classified into three major categories.

(A) LARGE AND MEDIUM SCALE TANNERIES WITH ADEQUATE LAND, FINANCE AND MANAGERIAL CAPACITY TO SET-UP INDIVIDUAL EFFLUENT TREATMENT PLANT

In India there are about 100 large and medium scale isolated tanneries who have set-up individual effluent treatment plants in their respective tanneries. The treatment capacity of these plants range from 50 – 1000 cubic meter per day.

(B) TANNERIES LOCATED IN CLUSTERS HAVING INADEQUATE LAND TO SET-UP INDIVIDUAL EFFLUENT TREATMENT PLANT.

In this case small scale tanneries in clusters wherever feasible may set-up common effluent treatment plants. So far varies agencies are setting up 30 such common effluent treatment (CET) plants to cater to the needs of 1500 small scale tanneries. The treatment capacities of such plants varies from 1000 – 30,000 cubic meter per day. Three such CET plants have already been commissioned at Vanyiambadi in Tamilnadu, Jajmau in Kanpur and at leather complex in Punjab. This concept of treatment of effluent envisages pre-treatment of effluent in the individual tannery by screening and removal of quits after which effluents from the all the tanneries are collected and taken for further treatment at CET plant.

Pre-requisite to set-up a CET plant is formation of an industrial co-operative society by the concerned tanneries intended to be benefited. This society will be responsible for construction and day to day operation and maintenance of the CET plant. Capital cost of each CET plant is shared by the tanneries and financial assistance to the extent of 40 – 50 % is given as grant by the central and concerned state Government. Loan facility for this purpose is also available from banks and other financial institutions.

(C) SCATTERED SMALL SCALE UNITS

In place like Calcutta there are more than 500 small scale tanneries but land available with them is inadequate even to set-up common primary treatment system. In some towns public sewerage system is not available as inadequate to carry the load of tannery effluents. In place like Jallandhar, tanneries are scattered and are surrounded by residential or commercial areas. In all these cases the only environmentally solution is to relocate these tanneries to a common industrial site with CET facilities. Similar steps have been taken in Calcutta and Jallandhar.

6.4 TANNERY EFFLUENT TREATMENT METHOD ADPOTED

As per the prevailing conditions in our country the treatment methods for effluents from tannery is divided into four steps:

Segregation of effluent from different operations like soaking, liming, chrome tanning, dyeing and fat liquoring etc. mixing of suitable sectional waste water from different process.

a) Primary treatment of tannery effluent.

b) Secondary biological treatment (anaerobic lagoon followed by aerated lagoon or anaerobic lagoon followed by extended aeration system)

c) Disposal of solid waste.

6.5 COST FACTOR INVOLVED IN SETTING UP AND RUNNING A TREATMENT PLANT

Capital cost involved in setting up an effluent treatment plant will vary according to the location, technology adopted and mode of sludge disposal. At 1993 rate the cost involved in setting up a Central Effluent Treatment Plant of 1000 cubic meter per day would vary from 1.5 – 3.0 crores rupees depending on above factors. In addition to this there will be operational and maintenance expenditure to be incurred. As there investments are non-productive expenditure, the cost of leather toward effluent treatment will be go up by Rs. 0.30 to 0.90 per square feet.

CHAPTER - VII

PRESENT STATUS OF LEATHER, FOOTWEAR, LEATHER GOODS AND SPORTS GOODS INDUSTRIES IN ASSAM

Assam is industrially backward state situated in the North Eastern region of our country. In Assam leather and leather based industries is in a very nascent stage. Though leather and leather based industries started coming up of late, the growth rate of this industry is very slow as compared to other industrially developed states in the country.

There is no large and medium scale industries engaged in the manufacture of leather, footwear, leather goods and sports goods. Barring a few, most of the leather, footwear, leather goods and sports goods industries are in tiny or cottage sector. The district wise number and position of these industries is given in Table 2.4 in the Chapter-II of this report. The Table-2.4 is based on the information received from varies DIC's of the state. The data in the Table 2.4 does not include the units, which are assisted by Khadi & Village Industries Board (Assam). About more than 100 units are registered with Assam Khadi & Village Industries Board, who are engaged in manufacture of footwear & leather goods. As per the second All India industrial census report of 1987-88 there were 16 registered units in Assam engaged in the manufacture of leather & leather products.

Leather industry in Assam is concentrated mainly in Kamrup, Dhubari, Sonitpur, Nagaon, Nalbari, and Cachar districts. Out of two tanneries in Cachar district M/S Chrome & Vegetable Industry, Badarpurghat was set up by an entrepreneur with an equity participation of Assam Small Industries Development Corporation, which was later taken over by ASIDC. But the production has been stopped for past few years in that unit. The other unit M/S Purbanchal Tannery, Silchar was set up with the assistance of Central Leather Research Institute, Chennai and S.I.S.I; Guwahati and of late has started manufacturing of full chrome finished leather. In Barpeta district a finished leather manufacturing tannery was set up in Co-operative sector with the assistance of S.I.S.I; Guwahati and financed by Assam Financial Corporation. M/S North eastern Tannery (P) Ltd Amerigog, Jorabat, Guwahati is the most modern tannery set up with an investment of about Rs.35 lakhs with sophisticate machinery and is capable of manufacturing different types of leather. But of late due to some unforeseen circumstances, the production of this unit has been discontinued. Six hides and skins processing units are located in Dhubri district with very low investment and all of them are in cottage sector.

Footwear is generally manufactured by registered & unregistered tiny, cottage, and Small Scale Industries in the state. Though very few numbers of registered footwear industries is located in different districts of the state as per Table number 2.4 of Chapter-II. The concentration is more in Kamrup, Nagaon, Nalbari, Cachar, Dirugargh and Tinsukia districts. In most of these units the investment in plant & machinery is in thousands of rupees and coming under the purview of tiny and cottage sector. Only the investment in respect of M/S Bombay Leather Works, Cachar, M/S Purbanchal Leather Industries, Cachar, M/S Street Art, Guwahati come under the purview of small- scale sector as per information available. Most of the footwear units in the state are not mechanised and engaged in manufacturing shoes and chappals with traditional method & skills. As a result of this the market share of these units is very low as compared to that manufactured by large, medium, SSI mechanised units in other part of the country.

Similarly in the case of leather goods industries, the products manufactured in the state are leather / Rexene bags, hand gloves, seat covers, sports goods, travel bags, purses, apron, leather garments, industrial leather gloves, industrial leather arm guards etc. Only two units namely M/S Purbanchal Leather Industries, Cachar, M/S Street Art, Guwahati, fall under the purview of small scale industries as per the investment criteria. The rest of the units engaged in the manufacture of the above leather goods in the state are in tiny and cottage sector.

In general, due to the low investment in the leather, footwear, and leather goods industries, the units in the state engaged in the manufacture of products by using outdated technology which is affecting the productivity and quality. This has made their products uncompetitive in the market.

Thus it is observed that most of the leather, footwear and leather goods industries in the Assam are in tiny and village sector barring a few which are in small scale sector. Annexure -I, gives the details of leather, footwear, leather goods & sports goods industries of Assam in different districts along with their addresses, registration number, investment, employment generated, and product manufactured by these units. It is also observed that leather and leather based industries have not developed in Assam as expected and still is in growing stage. Lot is needed to be done and a concerted effort by all the Government and non-Government agencies engaged in promotion of small scale industries in the country is required to nurture the leather and leather based industries during this growth phase of this industry in Assam.

CHAPTER - VIII

MARKET POTENTIAL AND SCOPE FOR DEVELOPMENT

Manufacturing activities do not end with the manufacture of the product. Successful market of the product with reasonable profit for the manufacturer and satisfaction of the customers is the ultimate aim of any industrial activity. Therefore any industrial activity should be preceded by a proper market survey and demand analysis to learn about its present & future market potential for the product. This survey should indicate the kind of methodology adopted for projecting the demand.

Leather, which is raw material for footwear & leather goods industries, has been manufactured since time immemorial. As the civilisation progressed and technology developed, different types of leather have also been developed. Today leather have formed wide application in footwear and leather goods industries. Footwear industry remains to be the largest consumer of leather. Today in India 65% of leather produced is consumed by the footwear industry.

Assam with a population of over 2.2 crore is the most thickly populated state among the seven North Eastern states. Thus Assam offers a very good market potential for footwear and leather goods industries. But unfortunately the present footwear & leather goods industries of the state have hardly been able to cater to the needs of the local market. This is due to the poor workmanship, low productivity and other related factors. As a result more than 80% of the local needs of footwear and 60% of local need of leather goods is met from products manufactured outside the state. The present production of finished leather is very nominal and tanneries in Assam are not able to cater to the needs of footwear and leather goods industries of the state and as a result leather is brought from places like Calcutta, Kanpur, etc.

The demand for footwear and leather goods is enormous in Assam. The people being very fashion conscious, specially the young generation. These items confirming to the latest fashion are having very good demand in the market. Due to the poor workmanship and low productivity of these units of footwear & leather goods manufactured locally have failed to make an impact on the local market to the extent desired. The customers are hesitant to purchase the locally manufactured products because of the quality. Most of the footwear & leather goods sold in the market come from places like Delhi, Agra, Calcutta, Kanpur etc. The prices of these articles are quite high and it is seen from the present market trend that the people do not mind to pay higher price for fashionable articles. If the same article of the comparative quality can be manufactured locally, the price of these articles can be brought down considerably and these locally manufactured articles will find wide popularity. Therefore it can be presumed that the market potential for these articles are very bright in Assam as well as in the entire N.E. region.

Leather and leather based industry in Assam needs to be developed through a sustained efforts from all the promotional agencies by developing the right infrastructure for utilizing the locally available resources and not only to cater the need of the local market but also outside and export market.

To sum up it can be said that the following leather & leather based items can be produced locally and these items have very good market potential not only in Assam but also in the entire N. E. region.

1. Leather processing and tanning.
2. Footwear manufacturing.
3. Leather goods manufacturing.
4. Rexene / canvas / synthetic cloth items.
5. Bone meal and
6. Pig hair brush etc.

However, it is to be kept in mind that leather and leather goods of good quality can not be produced without the use of latest technology and qualified personnel. These articles will find acceptability only if they are of good quality and readily available in the market at a competitive price.

CHAPTER - IX

PROBLEM FACED BY THE EXISTING UNITS

It has been earlier stated in this report that leather, footwear & leather goods industries in Assam are in their growth stage and are facing a lot of problems. A few of the problems faced by the entrepreneurs engaged in the manufacture of these items in Assam are highlighted below.

9.1 PROBLEM RELATED TO RAW MATERIAL:

Easy availability of raw material at a reasonable price is one of the important factors for successful running of any industry. From available data regarding livestock population, it is inferred that raw hides & skins are sufficiently available in Assam and there is very good potential for developing leather industries using locally available raw materials. But in reality no modern tanneries are coming up in this state as desired and the existing tanneries are facing a lot of problems in procuring their raw materials. This is because most of rawhides & skins are smuggled to Bangladesh and also that are sold in raw hides & skins markets of nearby states like Bengal and Bihar.

Due to non-availability of leather manufactured locally, the footwear & leather goods manufacturer of the region are facing scarcity of raw material for their units. As a result of this entrepreneurs are forced to purchase leather either from Calcutta or from local market at a very high price. Due to the very high cost of raw material the production cost are going up and the articles manufactured locally are not able to compete with the product manufactured in Calcutta, Agra, Kanpur, Delhi etc.

9.2 PROBLEMS RELATING TO MAN POWER

Lack of trained manpower is another major problem faced by the entrepreneurs of this region and also an important factor for lack of development of leather & leather based units in Assam. Trained leather & footwear technologists are in very few in numbers in this region. Besides the technical persons the local people have not acquired the skill of footwear & leather manufacture due to social restrictions and as a result the skill required for these industries is not locally available. Thus the small scale and tiny units engaged in the manufacture of leather, footwear and leather goods industries have to depend on skilled labour force available from the states of West Bengal, Uttar Pradesh, Bihar etc. The salary / wages paid to these skilled labour forces is quite high which in turn results in higher cost of production of the finished product.

9.3 PROBLEMS RELATING TO PRODUCTION

Production is one of the most vital aspects of any manufacturing activity. For any industry to run successfully, a balance should be maintained between quality and quantity. The other factor being the cost of production A successful industrial venture is the one that reaches an optimum level of quantity of production without sacrificing the quality, keeping the cost of production minimum.

But due to non-availability of appropriate technology, quality raw material in time and skilled manpower the entrepreneurs of this region are not able to achieve the above criteria for successful running of their industrial venture.

9.4 PROBLEMS RELATING TO MARKETING

Successful marketing of the product or service is ultimate aim of any entrepreneur and as a result marketing is the most important aspect in successful running of any industrial venture. The entrepreneurs of Assam, who are engaged in manufacturing of leather and leather product have not been able to make their presence felt in the local market due to the various reasons. Firstly due to the poor quality of the finished product, workmanship, use of outdated technology, and the hesitation of common man purchase the locally manufactured leather and leather based products. Secondly there is no organised marketing infrastructure for sale of these locally manufactured leather, footwear and leather goods. Moreover as the products manufactured by the individual entrepreneur are not in bulk quantity, it is not viable for these products to be marketed outside the state or region. Finally due to the poor financial position of the local entrepreneurs, they are not able to offer a longer credit period to the retailers whereas the suppliers from Kanpur, Agra, Delhi, Calcutta etc. are offering credit to the retailers for a long period up to 1 - 5 months.

Due to the reasons mentioned above the local entrepreneurs are facing stiff competition from that of the organised leather, footwear and leather goods manufacturers from outside the region, who are flooding the market with their products through their huge sales network and advertisement campaigns.

CHAPTER -X

SUGGESTIONS AND RECOMMENDATIONS FOR DEVELOPING LEATHER, FOOTWEAR AND LEATHER GOODS INDUSTRIES IN ASSAM

In the previous chapter, the problems faced by the local entrepreneurs in running their leather, footwear and leather goods industries have been discussed. A few suggestions have been made in this chapter to overcome these problems and also to develop leather, footwear and leather goods industries in the state.

The Government of Assam in consultation with the entrepreneurs and all the Government and Non-Government organisations engaged in the promotion of small scale, tiny and village industries, especially in the leather and allied sector, should formulate a policy to restrict the sale of local hides and skins to the outside the state. This would ensure that the existing tanneries do not face scarcity of raw hides and skins. The concerned state Government should encourage the establishment of new leather finishing units in the state so as to cater the needs of the local footwear and leather goods manufacturers. Till the time such finished leather manufacturing units come up in the region, the state Government can set-up raw material banks in certain central areas to make the raw material available for footwear and leather goods industries at a comparatively cheaper rates. This will enable to bring down the cost of raw material and prevent blockage of working capital of the entrepreneurs and enable them to utilize their capital in more productive way.

Due to the lack of skilled manpower in the state, for that matter in the entire North Eastern region, the entrepreneurs are unable to produce quality products and have to be dependent on labour from outside the state. The Directorate Of Industries, Government of Assam had started a training centre at Kalapahar in Guwahati for imparting training to local entrepreneurs in different techniques of footwear manufacture but the centre was closed down after a few years for some reasons. The state Government may take some effective steps to revive the training centre. At present National Small Industries Corporation is organising a six month long training programme at Industrial Estate, Bamunimaidam, Guwahati to impart training to improve the skills of the artisans of footwear and leather goods industries. Assam Science, Technology and Environment Council, Guwahati with technical collaboration of Central Leather Research Institute, Chennai has recently started a six month training programme on leather and leather goods manufacture at Industrial Training Institute, Kalapahar, Guwahati.

To overcome the problems faced by the entrepreneurs in this region at present and to develop leather, footwear and leather goods industries in general and bring these industries at par with those rest of India, the state Government can start one State Leather Development and Marketing Corporation with the assistance from central Government.

The proposed Corporation will be very much useful for providing the basic infrastructure required for leather and leather based industries in the state. The corporation may provide raw materials required by the local entrepreneurs for their respective units at a reasonable price and thus ensuring easy accessibility of the raw material.

The proposed corporation may start one model tannery and one model footwear & leather goods unit to impart on the job training to the local entrepreneurs and the artisans to improve their skill. These model tannery and footwear & leather goods units set up by the proposed State Leather Development Corporation may provide common facility services to the various leather, footwear & leather goods units of the state. For this purpose the state government can take the help of the central government organisations like North Eastern Council, Shillong, Central Leather Research Institute, Chennai, Central Footwear Training Institute, Agra / Chennai, Footwear Design & Development Institute, NOIDA, Small Industries Service Institute, Guwahati.

The proposed corporation can take up the marketing aspect of the products manufactured by different leather, footwear & leather goods industries of the state with Assam Government Marketing Corporation through their various show rooms across the country. The proposed corporation can also procure the finished goods produced by the local units and market these products through their own retail outlets under a common brand name. It can also explore the vast export market for these products in collaboration with reputed export houses.

To sum up it may be inferred that with a concerted effort put in by the entrepreneurs as well as the state and central government agencies there is a very bright possibility of putting the leather and leather based industries of Assam at par with that those in the other parts of India. This would create more job opportunity for the unemployed youth in this region and contribute to the economic development of the state.

CHAPTER -XI

CARCASS RECOVERY, FLAYING AND CURING PRACTICES IN ASSAM

The practice of carcass utilization is not a new concept. Since the beginning of civilization fallen animals, especially cattle were used to be lifted by people of certain community and skinned out (flayed) to procure hides and skins for the leather industry. In some cases they were taking out fat, horns etc. If the animal was not diseased, some people used to take out the meat from the selected parts of the carcass for consumption purpose. When bones of the dead animal dried up and the meat cleaned off by vultures, dog etc. the bones were collected as the raw material for the bone meal factories.

However in the recent years considerable attention is paid to the scientific carcass recovery, flaying and curing practices in the country for the proper utilization of the bodies of the fallen animals. These practices are aimed at:

1. To protect the environment from harmful effects caused by the putrefaction of these carcasses.
2. Gainful utilization of various parts of these carcasses.

The process for carcass recovery, flaying and curing is by far the most important from the point of view of rural employment, particularly of the weaker section of the society. It is by and large a decentralised activity depending on the number and availability of fallen animals. Being a decentralized activity it has been difficult to reach those employed in this area, so as to provide them with better tools and setting up a mechanism through which the fallen animals could be brought to a central place and all parts of the carcass could be converted into a value added product. Today, a considerable percentage of fallen animals in Assam are not recovered leading to loss of benefit, which could have otherwise occurred to the people of the state.

This activity is important not only from the point of view of employment but also because the quality of hides and skins available for tanning depends entirely on it. Since there is almost no participation of the organised sector in flaying and carcass recovery activities, the flayers remove only the hides and skins from the carcasses. Generally considered a lowly profession, not many people are attracted to it any longer, given the meagre amount of income it generates. However, if all parts of the carcass can be converted into value added products, this income can be doubled, and thereby benefiting the particular communities engaged in this profession. According to a study by C.L.R.I., if four animals are available for flaying every day, 300 days of the year and four people are deployed per carcass, annual income of a minimum of Rs. 20,000/- can be assured to each of them. This activity, if carried out in an organised manner, would also improve the quality of hides and skins for tanning.

In Assam the flaying activities are carried out in the traditional method by members of the flaying community migrated from Bihar and U.P. The carcass (mainly from the fallen cattle & buffalo) is dragged or rolled over bamboo or put on a handcart and taken to an isolated place and then the hides and skins are flayed with the help of traditional tools. Thus the hides and skins so produced suffer from postmortem defects such as flay cuts, scratch marks etc. in addition to the antemortem defects. This causes the deterioration in the quality of hides and skins. Butchers mainly slaughter goats and sheep for human consumption. The skins of these slaughtered animals are flayed by the butcher himself. Therefore the quality of skins of goats and skins are better than that of the hides of cattle and buffalo.

Carcass disposal practice defers in many ways at different places. In certain places the owner of the fallen animal has to pay some charges for lifting/removing the carcass of the fallen animal. In other places the persons belonging to a certain community remove the carcass of the fallen animal free of cost. The hides are then flayed. Disposal of carcass in the urban area is the responsibility of the concerned municipality or the local civic body, who authorises a contractor to remove the carcass to an isolated place for removal of hides and skins. After flaying the carcass is left at an open place to be scavenged by vultures, stray dogs etc. The left over bones is collected after some days.

The flayed hides and skins are sold to the raw hide dealers who have migrated from U.P. and Bihar, and set up a network of collection centres both in Assam and in the neighboring states. They virtually enjoy a monopoly and as a result the prices paid to the primary producer of hides and a skin is unattractive. Because of stigma the local population are not attracted to this profession, as a result only a limited number of local people are found in this line that too at the primary level. In general, the dealers have their main collection centres set up at the district head quarters and operate through their commission agents in other areas. In the rural areas hides and skins are retained by the butchers / primary collectors for about 10-15 days and are sold to the local or area dealers. In urban areas the butchers sell their stock in the “green” condition. From the area dealers raw stocks are dispatched either to the district or directly sent to the original dealers. It is found that the dealers send the hides and skins to Calcutta directly. The important collection centres in Assam are Guwahati, Barpeta, Goalpara, Naogaon, Silchar and Dibrugarh etc.

The people of Assam are mostly non-vegetarian and mutton, chicken, beef and pork are the most preferred form of meat amongst the local population. Although there is no registered slaughterhouse in the state, the estimated total production of meat in respect of cattle, buffalo, goat and sheep as per the sample survey for the year 1994-95 conducted by the Directorate of Animal Husbandry & Veterinary, Govt. of Assam is given below:

S. No	Name of the Sub Division	Cattle	Buffalo	Goat	Pig	Sheep
1.	Goalpara	1,38,181	11,995	89,798	59,792	3,452
2.	Dhubri	72,785	6,158	69,098	68,808	6,163
3.	Bilasipara	57,974	4,794	64,303	46,918	2,219
4.	South Salmara	54,874	4,401	38,607	4,908	4,313
5.	Kokrajhar	69,094	6,834	64,355	1,24,348	2,093
6.	Gosaigaon	57,981	5,250	53,065	1,32,041	1,030
7.	Bongaigaon	22,487	2,123	24,657	78,378	1,040
8.	Bijini	47,233	3,993	47,981	63,980	936
9.	North Salmara	37,991	3,877	25,245	35,487	4,082
10.	Barpeta	98,196	9,329	1,21,368	55,475	13,558
11.	Bajali	44,348	4,058	30,622	31,395	4,998
12.	Nalbari	1,39,717	11,514	95,006	1,44,238	5,789
13.	Guwahati	1,12,941	13,293	98,053	1,25,921	3,687
14.	Rangia	59,216	4,600	37,884	63,044	219
15.	Pragjyotishpur	32,415	4,986	21,206	37,275	736
16.	Mangaldoi	1,22,827	12,066	89,982	50,372	4,710
17.	Udalguri	91,418	6,318	55,661	1,45,363	4,088
18.	Tezpur	1,55,360	13,128	86,901	96,859	2,193
19.	B Chariali	1,22,570	11,203	72,762	1,10,727	2,384
20.	North Lakhimpur	99,823	10,548	47,077	1,98,502	202
21.	Dhakuakhana	77,070	5,820	54,815	81,218	233
22.	Dhemaji	1,02,352	9,752	1,40,556	2,20,681	256
23.	Jonai	49,831	3,913	70,363	43,509	1,137
24.	Morigaon	86,068	8,067	56,579	95,834	5,029
25.	Naogaon	87,391	7,936	72,538	81,979	833
26.	Kaliabor	56,608	5,306	71,019	44,468	553
27.	Hojai	66,008	5,287	28,124	30,831	189
28.	Golaghat	1,88,901	10,745	85,317	1,11,646	234
29.	Dhansiri	76,405	7,600	50,969	62,588	299
30.	Jorhat	1,06,831	7,512	46,020	1,50,134	1,318
31.	Majuli	34,408	2,516	30,016	1,06,055	266
32.	Sibsagar	35,542	4,023	34,112	1,11,777	127
33.	Nazira	15,228	2,080	13,060	55,580	125
34.	Charaideo	68,269	7,130	26,507	1,12,800	102
35.	Dibrugarh	2,20,803	19,145	1,57,768	1,77,611	648
36.	Tinsukia	1,19,310	11,300	85,051	93,469	241
37.	Margherita	40,452	4,797	37,343	35,931	218
38.	Sadiya	19,508	2,046	18,298	1,21,830	280
39.	Diphu	1,38,664	16,541	81,322	1,36,712	925
40.	Bokajan	66,180	7,720	17,421	40,320	210
41.	Hamren	95,350	11,362	61,463	1,88,557	464
42.	Halflong	36,509	5,748	41,709	1,56,429	196
43.	Maibong	19,677	2,407	24,083	88,837	213
44.	Karimganj	1,08,285	9,018	73,890	12,791	3,041
45.	R.K.Nagar	54,819	3,770	30,258	19,679	1,663
46.	Hailakandi	52,356	3,574	44,365	21,518	1,237
47.	Silchar	1,48,340	15,425	1,10,045	1,27,196	3,220
	Assam Total	**37,36,678**	**3,51,000**	**28,32,591**	**41,95,669**	**91,822**

Source: Directorate of Animal Husbandry & Veterinary, Govt. of Assam

The slaughtering operation and production of meat for sale to common public is not organised in this region. As such there is no recognised slaughterhouse and no definite system or process is followed in this regard. Animals are slaughtered in open places near the premises of the butcher without the facility of running water, proper supervision and sanitation.

11.1 SUGGESTION FOR IMPROVEMENT

The artisans have acquired skills through the knowledge passed on over generations. However their skill up-gradation is possible through training, supply of improved tools, machinery & equipment and marketing assistance. This can be achieved by setting up Carcass Recovery and Flaying Centres, where not only the hides and skins but also the flesh and bones of dead animals are put to proper use. While the hides and skins go for tanning, tallow can be removed from the flesh and boiled & dried flesh may be used for poultry feed. Similarly, bones can be used for preparing bone meal to be used in agriculture sector.

Under the Leather Technology Mission (LTM), Khadi and Village Industries Commission (KVIC) had selected eight centres in different parts of the country for modernising the flaying and carcass recovery activities with an expenditure of Rs. 19 lakh approximately for each such centres. In Assam the state government may approach KVIC for such type of assistance. By implementing the LTM programme in different centres the following results have been observed.

1. Availability of improved hides and skins, free from flay cuts.
2. Improved tallow, both quality and quantity wise.
3. Digested bone meal. and
4. Bacteria free meat meal.

It has also resulted in improved environmental condition by minimising foul smell through installation of effluent treatment plant. This also has had a good social impact.

Better working condition and organised carcass collection and processing can result in higher employment too. It has been estimated that on investment of Rs. 25 lakh on each such centres would result in full time employment of 20-25 persons per centre. In addition, creation of such centres would enable the tanners of this state to source the raw material directly and thereby reducing their dependence on the supply of the raw hides/skins from the local traders. If KVIC runs such type of Leather Technology Mission Programme in Assam, with the assistance of the state government, smuggling of raw hides and skins to Bangladesh and nearby states like West Bengal and Bihar can also be minimised.