Report on Business Opportunity Identification Study of Meghalaya

Team Members

Bipin Shah

Padmin Buch

April, 2015

Prepared for

The State Institute of Rural Development
Meghalaya

Prepared by

Entrepreneurship Development Institute of India
Ahmedabad, Gujarat

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APRIL, 2015

Prestone Tynsong
Member,
Meghalaya Legislative Assembly.

0363 - 2224284 (O & F)
0364 - 2230085 (R)
+919862570164 (M)

D.O. No.PT/MIN/C&RD/12/15/11

Date .....
Dated Shillong, the 22nd May, 2015

The State Institute of Rural Development in its endeavour to enhance rural livelihoods and provide opportunities for the growth of entrepreneurship in the state, signed an MoU with the Entrepreneurship Development Institute of India, Ahmedabad in 2013-14. A number of activities and interventions were agreed upon to be taken up jointly by the SIRD and EDI. It was felt that the youth and upcoming entrepreneurs need proper guidance and handholding, to achieve their goals and therefore should have various documents and materials for their reference besides the normal capacity building activities that are being taken up. The Business Opportunities Identification study was undertaken by the EDI to indicate the basket of business opportunities in Meghalaya that will be useful to all entrepreneurs, government, bankers and other development agencies and individuals working in the field of entrepreneurship promotion.

I express my sincere thanks to the EDI for taking up the study and the SIRD for facilitating the same. I hope that this work will be beneficial to all concerned.

(P. Tynsong)

ENTREPRENEURSHIP DEVELOPMENT INSTITUTE OF INDIA

Near Village Bhat, Via Ahmedabad Airport & Indira Bridge, P.O. Bhat - 382 428, Dist. : Gandhinagar, Gujarat.
Tel. : +91 - 79 - 23969157, 23969160 Telefax : (079) 23969160
E-mail : dinesh@ediindia.org Website : http://www.ediindia.org

Dr. Dinesh Awasthi
Director

Foreword

Entrepreneurs are opportunity seekers. Once they perceive an opportunity, it does not take them long to convert it into a viable and profitable business proposition. However, recognition of a good and viable business opportunity is a tricky affair. And it is most crucial too. In my career of over 30 years, I have been asked so many times as to how to identify a good business opportunity. I have no clear cut answer. It is an art of perception and science of converting it into a sound and profitable business. The point I want to drive home is that every business entails some risk. However, the question is how to reduce this risk. And the best way is to work hard towards identifying a good business opportunity; the rest just falls in place.

In most of the rural and economically backward regions, the perception of people about opportunities is limited. Their understanding remains confined to what they see in their day-to-day lives. During research undertaken for U.P., when I asked people what business opportunities they thought existed and what would they like to do; to my surprise, the list did not move beyond dairy, poultry, fishery, grocery shop, tea stall and roadside restaurant (Dhaba). A few more enlightened among them talked about motorcycle and tractor repair shop, tailoring, cloth store and readymade garment shop. When probed further, I realised that this was all that they had been exposed to and hence, had restricted choices. Later, we carried out an exercise to identify high potential businesses in the area, and went to them with a basket of opportunities. The response was remarkable. Everyone wanted to try out something new. The simple lesson here is that potential entrepreneurs need to be exposed to business ideas with high potential. A set of pre-identified business opportunities could come quite handy, in this regard.

I am happy to present this basket of opportunities, jointly developed by Entrepreneurship Development Institute of India and the State Institute of Rural Development of Meghalaya, under the leadership of Shri Bipin Shah and Shri Padmin Buch of EDI, for the benefit of potential entrepreneurs of Meghalaya. I would like to compliment professionals of both the organisations for bringing out such a useful document. I am sure; this compendium will contribute a great deal to the much needed promotion of entrepreneurship in the state.

Dinesh Awasthi

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1.0 Background

Meghalaya is one of the Eight Sister States of North East India.Tribal people make up the majority of Meghalaya's population. The Khasis are the largest group, followed by the Garos and then the Jaintias. Meghalaya is basically an agricultural state with about 80% of its population depending entirely on agriculture for their livelihood. Nearly 10% of the geographical area of Meghalaya is under cultivation. Agriculture in the state is characterized by limited use of modern techniques and low productivity. A substantial portion of the cultivated area is under the traditional shifting agriculture known locally as “Jhum” cultivation.As a result, despite the vast majority of the population being engaged in agriculture, the contribution of agricultural production to the state’s GDP is low, and most of the population engaged in agriculture remain poor. Moreover, the state is still dependent upon imports from other states for most food items such as meat, eggs, food grains etc.

Rice is the dominant food grain crop accounting for over 80% of the food grain production in the state. Other important food grain crops are maize, wheat and a few other cereals and pulses. Besides these, potato, ginger, turmeric, black pepper, areca nut, tezpatta, betelvine, short-staple cotton, jute, mesta, mustard and rapeseed etc. are some of the important cash crops. Besides the major food crops of rice and maize, the state is renowned for its horticultural crops like orange, lemon, pineapple, guava, litchi, banana, jack fruits and temperate fruits such as plum, pear, peach etc.Oilseeds such as rape, mustard, linseed, soybean, castor and sesame are grown on nearly 100 kms. Rape and mustard are the most important oilseeds accounting for over two-thirds of the oilseed production of nearly 6.5 thousand tonnes.

Climatic conditions in Meghalaya permit cultivation of large variety of horticulture crops including fruits, vegetables, flowers, spices and medicinal plants. The important fruits grown include citrus fruits, pineapples, papayas, bananas etc. The ‘mandarin oranges’ grown in Meghalaya are of very high quality. In addition to this, a large variety of vegetables are grown in the state, including cauliflower, cabbages and raddish.Areca nut plantations can be seen all over the state, especially around the road from Guwahati to Shillong. Other plantation crops like tea, coffee and cashews have been introduced lately and are becoming popular. A large variety of spices, flowers, medicinal plants and mushrooms are grown in the state.

Meghalaya is considered to have a rich base of natural resources. These include minerals such as coal, limestone, Sillimanite, Kaolin and granite among others.

Meghalaya has a large forest cover, rich biodiversity and numerous water bodies. Meghalaya has much natural beauty, and the state government has been trying to exploit this for promoting tourism. All these rich resources offer great potential for setting up small/micro enterprises in the State.

The State Institute of Rural Development (SIRD), Govt. of Meghalaya has entered into a MoU with Entrepreneurship Development Institute of India (EDI), Ahmedabad for training 10,000 entrepreneurs over a period of three years. To promote local resource based enterprises and to promote entrepreneurship and business development, it is felt that there is an urgent need to carry out Business Opportunities Identification exercise in Meghalaya. The availability of project profiles on viable business opportunities in the State would go a long way to counsel and guide the potential entrepreneurs in setting up of businesses. It is found everywhere that entrepreneurs respond to business opportunities very quickly. As Meghalaya has excellent natural resources and due to its size, it offers wide variety of business opportunities in manufacturing as well as service sector.

2.0 Objective

The objective of this exercise was to carry out detailedstudy throughout the State of Meghalaya to generate viable business ideas based on availability of local resources, local skills, local needs and demand. Secondary objective was to generate data/ information on existing natural resources and ways of utilization to promote small enterprises. Moreover, the exercise was also to focus on existing industries, trade flows in the State and service sector status and future scope. In all, it was expected that this exercise would lead toidentifying about 50 viable business opportunities and preparing project profiles on each identified opportunity based on local conditions.

3.0 Methodology

The exercise of identifying business opportunities was undertaken in association with local resource persons of SIRD so that in the process they also are trained in identifying opportunities and in future they can do this exercise independently.

The study methodology employed comprised of two phases. The first phase involved exhaustive secondary data search and desk research. The entire exercise, both of secondary data search and primary data collection through field survey was carried out in four major districts of the state namely Jaintia hills, East Khasi Hills, West Khasi Hills, East and West Garo Hills districts. A map showing locations of field visits is attached as Annexure I.

For secondary data collection, a format was developed which is placed as Annexure-II. More than 25 different published reports and data sources were scanned and studied by EDI team for first two to three weeks. In Annexure III list of secondary data sources referred is given.

The field survey was carried out by a team of two senior faculty members of EDI assisted by 5 to 6 project personnel from SIRD and covered all major districts of the state. During the visit, the team interacted with about 25 organisations, individuals, existingentrepreneurs, associations and government officials to seek their views on viable business opportunities. Details of the resource persons interviewed are given in Annexure-IV.

Data collected during this research as well as field interviews was analysed in detail with focus to identify viable business opportunities and assess their technical, marketing and financial viability. Based on this, project profiles covering above aspects for 50 identified opportunities were prepared.The findings and outcome of this study are discussed in the next chapter.

4.0 Findings of the Study

Rationale of Business Opportunity Identification:

The study of opportunity identification is based on assessment of several enabling factors which create industrial and investment potential for any region. In identifying viable Business Opportunities, we applied following criteria:

i. Opportunities based on Agricultural produce
ii. Horticulture (Fruits & Vegetables)
iii. Potential based on Tourism
iv. Livestock resources
v. Domestic demand of consumer and industrial finished products & raw materials and those which are imported from other states
vi. Health care and allied needs
vii. Available handicrafts and other skills
viii. Hi-Tech skills and knowledge
ix. Service sector

Identified Sectors:

In order to identify opportunities in the above sectors we studied several factors of the state such as overall economy, availability of natural resources and other

resources, availability of traditional skills & crafts, analysis of imports of goods and services and the state from outside, potential of tourism and availability of high end technical knowledge and skills, quality of infrastructure and investment policies and climate. Our findings on these factors are presented below

4.1 Economy of Meghalaya

Meghalaya is basically an agricultural state in which about 80 percent of its total population is dependent primarily on agriculture for livelihood.

Besides the major food crops of rice and maize, Meghalaya is known for its oranges (Khasi Mandarin), pineapple, banana, jackfruits, temperate fruits like plums, peaches and pear etc. The popular cash crops, which are traditionally cultivated, include turmeric, ginger, black pepper, areca nut, Betel-vine, tapioca, short staple cotton which is supposed to be the best in the world, jute and mesta, mustard and rapeseed. Special emphasis is presently laid on non-traditional crops like oil seeds, cashew nut, tea and coffee, orchids and commercial flowers.

Advantages of Meghalaya

It occupies an advantageous position over several other States because of the following factors:-

- Store house of natural resources
- Fairly large pool of skilled, semi-skilled and unskilled labour;
- Congenial investment climate
- Liberalised industrial policy together with single window clearance facility;
- Adequate infrastructural facilities
- Favourable regulatory environment
- Congenial industrial relations climate etc.

4.2 Status Study of Resources

In this chapter we have analysed availability of various resources available in the state as well as inputs grown, which could have potential for being processed into consumer or industrial products. The main resources which we have analysed are Agri and Horticulture, Mineral resources, livestock, crafts and skills and the existing infrastructure. We have also analysed in this chapter, goods and services being imported from other states.

4.2.1 Agri Resources

Meghalaya has a variety of agricultural crops, many of these have potential for post farm processing to make consumer products as well as some industrial raw materials. In the following table-1 details of crops produced in Meghalaya in its 6 districts is given.

Table 1

Agricultural crops in Meghalaya : Production in the Year 13-14
(In Metric Tonnes)

Sl. No.	Name of crops	Ri-Bhoi District	East Khasi Hills	West Khasi Hills	Jaintia Hills	East Garo Hills	West Garo Hills	South Garo Hills	Total Meghalaya
		Prodn	Prodn	Prodn	Prodn	Prodn	Prodn	Prodn	Prodn
1	2	3	4	5	6	7	8	9	10
I a)	**RICE** Autumn	440	842	191	248	24833	34872	9797	71223
b)	Winter	29001	11500	13021	24123	12636	53054	7303	150638
c)	Spring	350	250	128	211	172	57252	322	58685
	TOTAL RICE	29791	12592	13340	24582	37641	145178	17422	280546
2	Wheat	-	-	**5**	-	**61**	**723**	-	**789**
3	Maize	4877	6735	7872	5881	2033	10572	1685	39655
4 a)	**SMALL MILLETS** Finger Millet								
b)	Foxtail Millet								
c)	Pearl Millet								
d)	Job's tear								
e)	Other Millets								
	TOTAL SMALL MILLETS	**27**	**298**	**334**	**267**	**529**	**809**	**274**	**2538**
5 a)	**PULSES** Pea	62	1973	126	120	318	1235	320	1454
b)	Cow Pea	14	48	27	55	175	1702	275	2296
c)	Lentil		148			59	1030	46	1283
d)	Tur (Arhar)	-	-	-	-	112	1211	102	1425
e)	Gram	-	-	-	-	696	1057	70	1823
	TOTAL PULSES	**76**	**2169**	**153**	**175**	**1360**	**6235**	**813**	**10981**
	TOTAL FOODGRAINS	**34771**	**21794**	**21704**	**30905**	**41624**	**163517**	**20194**	**334509**
6 a)	**OILSEEDS** Castor	6	-	-	-	20	24	-	50
b)	Sesamum	-	100	46	29	280	1361	182	1998
c)	Rape&Mustard	140	79	35	78	841	7862	237	9272
d)	Soyabean	287	404	51	898	192	1244	31	3107
e)	Linseed	-	-	-	-	-	48	-	48
	TOTAL OILSEEDS	**433**	**583**	**132**	**1005**	**1333**	**10539**	**450**	**14475**
7 a)	**FIBRE CROPS** Cotton*	-	-	-	-	2396	5961	245	8602
b)	Jute**	-	-	-	-	4981	58038	2523	65542
c)	Mesta**	-	-	-	-	441	20500	5287	26228
8 a)	**OTHER CROPS** Sugarcane	-	-	24	12	114	133	32	315
b)	Tobacco	-	-	28	-	213	358	101	730

N.B.: **Jute& Mesta= In bales of 180 Kgs/each

It can be seen that rice is a major crop in Meghalaya in almost all the districts. This is followed by maize. The total production of rice in Meghalaya in the year 2013-14 in all the 7 districts was 2,80,546 tonnes with an average yield of 2550kg/hectare. Total production of maize during 2013-14 was 39,655 tonnes with an average yield of 2200kg/hectare.

The third important crop of Meghalaya is jute particularly concentrated in West and South Garo Hills district. In the year 2013-14, total jute production in these districts was 65, 542 bales of 180 kg each with an average yield of 1815 bales/hectare. Yet another important crop is mesta produced in these two districts only. The production in the year 2013-14 was 26, 228 bales of 180 kg each with an average yield of 1055 bales/hectare.

In addition to these oil seeds also are grown in reasonable quantities and available for different processing. Major oil seeds produced are sesamume, rape and mustard seeds and soyabean. The total oil seed production during the year 2013-14 was 14, 475 tonnes with an average yield of 1051kg/hectare. Among the three seeds rape and mustard have the highest production of 9272 tonnes. These have good potential for industrial application. Pulses production for the year 2013-2014 was 10,81 tonnes.

4.2.2 Horticultural Resources

Horticultural crops have generally vast potential for post farm processing of fruits and vegetables to convert them into many consumer products. Hence adequate availability of surplus horticulture produce is essential to promote Micro and Small processing units in food and fruit processing sector.

Meghalaya produces a substantial quantity of different fruits and vegetables. Fruits like oranges, pineapples, peaches, pears, plums, guavas and bananas are grown in the region. Super table variety of cashew is also grown. Further plenty of potatoes both in summer and in winter are grown with production of a little over 1.46 lakh tonnes of potatoes alone.

In the following table-2 details of production of different horticulture crops in the year 2013-14 is given.

Table 2

Production of Different Horticulture Crops in Meghalayain the Year 2013-14
(In Metric Tonnes)

Sl. No.	Name of crops (Horticulture)	Ri-Bhoi District	East Khasi Hills	West Khasi Hills	Jaintia Hills	East Garo Hills	West Garo Hills	South Garo Hills	Total Meghalaya
		Prodn	Prodn	Prodn	Prodn	Prodn	Prodn	Prodn	Prodn
1	2	3	4	5	6	7	8	9	10
I	**CITRUS FRUITS**								
a)	Khasi Mandarin	1020	21317	5765	6112	2118	4043	517	**40892**
b)	Assam Lemon	362	1810	117	121	640	848	64	**3962**
c)	Pomelon	535	212	85	54	200	220	8	**1314**
d)	Others	246	3899	-	-	154	210	237	**4746**
	TOTAL CITRUS FRUITS (a+b+c+d)	**2163**	**27238**	**5967**	**6287**	**3112**	**5321**	**826**	**50914**
2	Pineapple	44243	6995	4586	629	24392	28723	8199	**117767**
3	Banana	16087	8238	4465	1164	27742	24786	3950	**86432**
4	Papaya	1453	798	304	49	1721	1549	107	**5981**
5	Strawberry	423	153	-	-	17	147	-	**740**
6	Temperate Fruits								
7	Misc Fruits								
	TOTAL FRUITS (1+2+3+4+5+6+7)	**64369**	**43422**	**15322**	**8129**	**56984**	**60526**	**13082**	**261834**
8	**TUBER CROPS**								
a)	Potato	184	121787	52506	1073	1122	4661	482	**181815**
b)	Sweet Potato	968	2992	4862	3332	1004	1972	514	**15644**
c)	Tapioca	366	3250	5176	279	12138	8497	2241	**31947**
	TOTAL TUBERS	**1518**	**128029**	**62544**	**4684**	**14264**	**15130**	**3237**	**229406**
9	**SPICES CROPS**								
a)	Ginger	10574	4249	3204	3747	24556	15924	997	**63251**
b)	Turmeric	1105	642	465	8712	780	2837	584	**15125**
c)	Chilies	183	309	59	52	282	770	205	**1860**
d)	Garlic	-	-	-	-	-	-	-	-
e)	Black Pepper	121	154	95	26	34	219	32	**681**
f)	Texpatta	-	-	-	-	-	-	-	-
	TOTAL SPICES	**11983**	**5354**	**3823**	**12537**	**25652**	**19750**	**1818**	**80917**
10	**PLANTATION CROPS**								
a)	Tea	1327	**10**	-	-	480	4111	33	**5961**
b)	Arecanut	110	5564	1399	2868	2735	11895	543	**25114**
c)	Cashewnut	-	-	-	-	338	13484	4117	**17939**
d)	Rubber	752	147	25	29	205	117	30	**1305**
e)	Coffee	35	3	9	5	124	16	20	**212**
	TOTAL PLANTATION CROPS	**2224**	**5724**	**1433**	**2902**	**3882**	**29623**	**4743**	**50531**

Major citrus fruits grown in Meghalaya are Khasi Mandari (40, 892 tonnes), Assam lemon (3962 tonnes). Other major fruits are pineapple (1,17,767 tonnes), banana (86, 432 tonnes), papaya (5981 tonnes)

In addition to above, huge quantity of potatoes is grown. In the year 2013-14 the total production of potatoes are 181,815 tonnes with an average yield per hectare of 9855 tonnes. Other tuber crops varieties grown is tapioca, the production of which in the year 2013-14 was 31, 947 tonnes with an average yield of 6030 kg/hectare. Sweet potatoes also form a significant crop with production of 15, 644 tonnes with an average yield of 3492 kg/hectare. Major spices grown are ginger (6325 tonnes in the year 2013-14), turmeric (15125 in the year 2013-14).

In the plantation crops category major crops grown are arecanut (25,114 tonnes in 2013-14), cashewnut (17, 939 tonnes) and tea (5961 tonnes in 13-14)

It can be seen from the above table that majority of processable varieties of fruits, vegetables like banana and onions and spices are grown in sufficient quantities for establishing food and other agri processing industries.

In addition to above products in horticulture, good varieties of other vegetable crops are also grown in Meghalaya.

In following Table-3 details of production of important vegetables crops for the year 13-14 is given.

Table – 3

Production of Vegetable Crops in 2013-4
(In Metric Tonnes)

Sl. No.	Name of crops	Ri-Bhoi District	East Khasi Hills	West Khasi Hills	Jaintia Hills	East Garo Hills	West Garo Hills	South Garo Hills	Total Meghalaya
		Prodn	Prodn	Prodn	Prodn	Prodn	Prodn	Prodn	Prodn
1	2	3	4	5	6	7	8	9	10
1	Peas	421	1335	363	573	983	1776	261	5712
2	Beans	505	1354	480	1241	531	1645	374	6130
3	Carrot	391	16660	635	632	926	1814	354	21412
4	Cabbage	1074	28407	1276	1297	4550	2579	761	39944
5	Cauliflower	166	48619	769	686	1178	18274	7450	77142
6	Turnip	203	3809	685	489	519	1635	321	7661
7	Radish	320	20596	776	736	2008	3139	717	28292
8	Beet Root	250	2725	229	200	2089	1985	744	8222
9	Brinjal	259	911	252	390	6225	4110	1215	13362
10	Ladies Finger	674	128	-	46	528	1250	651	3277
11	Bottle Gourd	914	1348	520	680	951	2456	1155	8024
12	Pumpkin	416	1598	2519	649	5739	2245	3536	16702
13	Tomato	2847	25788	609	13966	1644	5009	1559	51422
14	Knoi-Khol	179	849	316	280	750	2316	303	4993
15	Capsicum	628	930	250	119	1140	824	310	4201
16	Lettuce	182	685	181	118	246	145	258	1815
17	Cucumber	610	942	271	106	901	920	420	4170
18	Mustard (Leaves)	330	505	338	314	525	79	260	2351
19	Coriander (Leaves)	-	77	102	70	131	650	505	1535
20	Onion	589	568	341	74	699	1295	563	4129
21	Bitter Gourd	602	837	469	515	936	1024	910	5293
22	Teasle Gourd	345	392	366	308	812	727	1614	4564
23	Ridge Gourd	935	1096	572	594	1473	1903	1508	8081
24	Broccolli	472	497			330	462		1761
25	Total Vegetables	**13312**	**160656**	**12319**	**24083**	**35814**	**58262**	**25749**	**330195**

Total production of different varieties of vegetables, excluding crops like potato, Sweet potato and tapioca, which are clubbedwas in horticulture category was 3,30,195 tonnes in the year 13-14 with an average yield of 167 kgs/hectare. Major

crops among these are cauliflower, tomato, cabbage, raddish, carrot and brinjal. In addition to this crops like ridge gourd , bottle gourd, turnip and beans are also grown.

It can be thus seen that in the vegetable category key vegetables like potatoes, tomatoes, cauliflower, raddish and other varieties are grown in significant quantity. The potential of processability into consumer products are only for 3 or 4 vegetables grown abundantly and available for processing,after use as food item.

4.2.3 Mineral resources

Minerals are important natural resources, and many of them play critical role in manufacturing several industrial raw materials/finished products. Details of Major and minor minerals availability and deposits are as under:

- Coal and limestone are the two important minerals found in the state of Meghalaya. They are found in the Mesozoic-Teritiary sequence of the area and are incorporated in the Shella Formation of the Jaintia Group of the Eocene age.
- The coal is primarily high in sulphur and sub-bituminous in nature with sulphur percentage varying between 2.2-7.4 . The total resource of coal in the state is estimated at 576.48 million tonnes and there is extensive cottage type of mining by local people all over the area. The coal is suitable for use as fuel for heat and power generation, in producing iron, steel and gas and to make coke for metallurgical purposes. Total annual production of coal in the state is slightly above 5.0 million tonnes and is transported outside the state.
- Huge deposits of good quality limestone, cement to chemical grade, are available in the state. The total estimated reserve of limestone is 14,700 million tonnes. Limestone mining is done primarily for mime making industry. Some amount of limestone is consumed by 5 cement plants and some are exported to Bangladesh. Total annual production of limestone in state is slightly above 21 lakh tonnes.
- There are huge deposits of lithomargic clay in different parts of the state. The lithomargic clay deposits in the Garo hill districts are high temperature resistant (about 1750^0C) which can suitably be used for furnace lining and boiler oil stills. This clay may also find their use in pottery, earthern ware, cooking ware, vases, tiles, polishing bricks etc. The total indicated reserve of lithomargic clay is 97 million tonnes.

- Small patches of kaolinised rocks, which are decomposed product of feldspar, are recorded from different parts of the state. The recovery percentage of Kaolin from the source rock is upto 27%. The estimated source of kaolin in the state is 5.24 million tonnes. It can be suitably utilised in white ware porcelain and paper making industry.
- Large tracks of Meghalaya are covered by granite, amphibolite, dolerite, quartzite etc. hard rocks which may be suitably processed into table tops and wall/floor cladding
- Minor deposits of glass sand, quartz, feldspar, buxite, rock phosphate, phosphatic nodule, gypsum, sillimanite and base/trace metal are recorded from different parts of the state.

In following table-4 details of availability of minerals as of year 2013-14 are given.

Table - 4

Estimated Reserves of Minerals in Meghalaya

Minerals	Reserves (In million tonnes)	Grades
Limestone	14700	Cement, metallurgical & chemical
Coal	576.48	Sub-bituminous, partly caking med to high sulphur and CV
Kaolin	5.24	White ware
Lithomargic Clay	97	White ware, earthen ware, furnace lining, curing soap, etc
Glass Sand	3	Ordinary glass ware
Quartz	0.5	Ordinary ceramic grade
Feldspar	0.127	Ceramic grade
Iron Ore	3.6	Low grade
Sillimanite	0.045	High temperature furnace lining
Bauxite	1.45	Low grade (40% AI_2O_3)
Rock Phosphate	0.015	Low grade (15-30% P_2O_5)
Granite	50	Table top, wall cladding etc.
Uranium	9.22	0.104% U_2O_3

4.2.4 Live Stock and Dairy

Besides Agri, Horticultural and mineral resources, existing livestock resource play an important role in the economy of the state particularly with regard to developing industries based on processing of milk, meat, eggs, wool, hides which are the outcome of livestock rearing and production. Further, important factor is the surplus availability of these products, after human consumptions as, food items for subsequent processing for consumer and industrial use.

Major livestock resource of Meghalaya are cattle, (cows, both cross breed as well as indegenious) buffalo, goat, pigs, cross breed sheep, poultry and dogs. For the purpose of usable output from these livestock varieties, key ones are cattle, buffalo, poultry and goat for the purpose of getting products like milk, eggs, meat etc. From species like goat and sheep, mostly wool may be usable for further processing and manufacture of woollen clothes, aprons if sufficient quantity of wool is available.

In the following table-5 variety and population of livestock resource in Meghalaya is given.

Table - 5

Livestock population (as per 2007 Census) and Growth Rate as compared to 2003 Census

Sr. No.	Species	Population	Total	Growth rate (%)
1	Cattle	Cross breed	26848	16.40
		Indigenous	860395	15.60
2	Buffalo	Indigenous	22627	25.60
3	Goat	Indigenous	365483	11.65
4	Pig	Exotic/Cross breed	70157	147.90
		Indigenous	454200	16.26
5	Sheep	Exotic/Cross breed	242	(-)61.60
		Indigenous	20799	18.36
6	Poultry	Fowl	3026497	100.28
				4.87
		Duck	66378	138.95
				4.44
		Others	21	-
7	Dog		224126	11.09

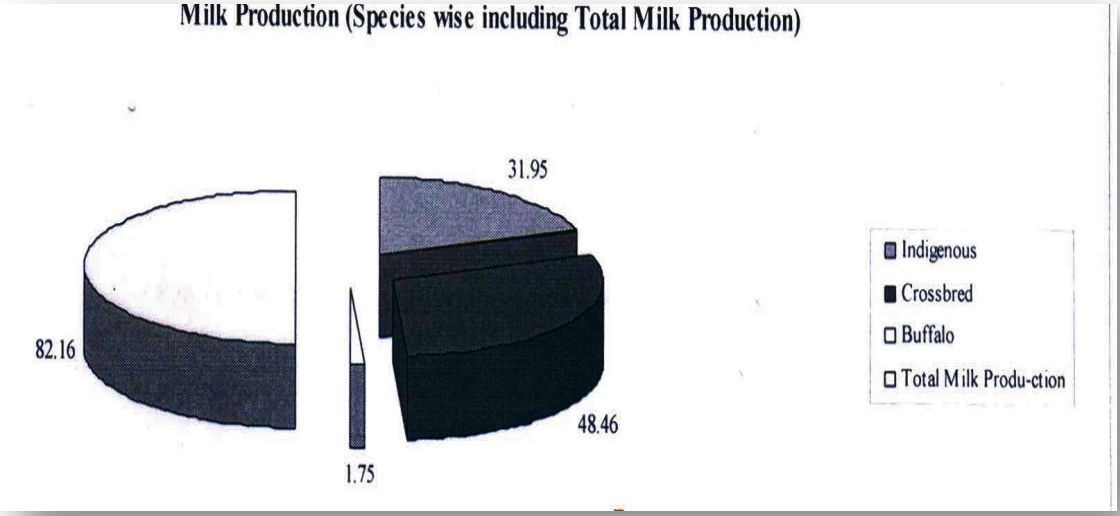
As it can be seen the growth rate of livestock population in key species like cattle, buffalo and poultry has been very significant. For e.g. the growth rate of poultry in population as per 2007 census was 100%. In cattle it was 16% and in buffalo 25%.

Key produce of cattle are milk, eggs, meat in so far as consumer food items are concerned. The details of milk production in the state in the year 2013-14 are given in table-6 below:

Table - 6

Total Milk Production in the State ('000' Tonnes) 2013-14

Sr. No.	Name of Districts	Cow's Milk			Buffalo	Total Milk Production	Previous Years Production 2012-13	% Increase or Decrease over 2012-13
		Indigenius	Cross breed	Total				
1.	East Khasi Hills	1.81	20.30	22.10	0.00	22.10	21.270	3.90
2.	Ri-Bhoi	3.34	21.46	24.80	0.42	25.22	24.180	4.26
3.	West Khasi Hills	5.20	0.97	6.16	0.21	6.37	6.450	-1.24
4.	Jaintia Hills	4.22	2.61	6.82	0.17	7.00	7.040	-0.57
5.	East Garo Hills	6.11	0.14	6.25	0.12	6.37	6.370	0.00
6.	West Garo Hills	9.72	2.99	12.71	0.82	13.54	13.750	-1.53
7.	South Garo Hills	1.55	0.00	1.55	0.01	1.56	1.450	7.59
8.	State (Overall)	31.95	48.46	80.41	1.75	82.16	80.490	2.07



It can be seen that the milk production in 2013-14 was estimated at 82.16 thousand tonnes. This showed a 2% growth compared to previous year 2012-13.

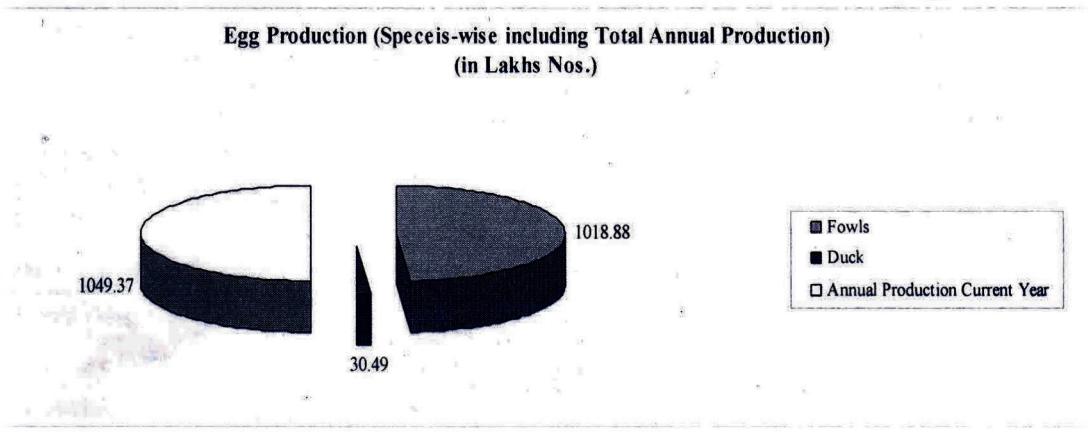
The other products of the livestock are eggs and meat.

In the following table-7 estimated production of eggs in the year 2013-14 is given:

Table – 7

Estimated Total Egg Production (Lakhs Numbers) 2013-14

Sr. No.	Name of Districts	Total Eggs		Annual Production Current Year (2013-14)	Annual Production Previous Year (2012-13)	% Increase or Decrease over the previous year
		Fowls	Duck			
1.	East Khasi Hills	168.50	2.60	171.10	164.83	3.80
2.	Ri-Bhoi	132.73	2.47	135.20	124.23	8.83
3.	West Khasi Hills	144.35	1.24	145.59	133.35	9.18
4.	Jaintia Hills	162.16	3.64	165.80	157.91	5.00
5.	East Garo Hills	120.90	0.95	121.85	110.68	10.09
6.	West Garo Hills	233.91	18.01	251.92	279.97	-10.02
7.	South Garo Hills	56.32	1.59	57.91	56.67	2.19
8.	State (Overall)	1018.88	30.49	1049.37	1027.64	2.11



It can be seen that the total production in 2013-14 was 1049.37 lakh numbers which showed a growth of 2.11% over previous year. Thus this offers some potential for further processing of milk and eggs in terms of ready to eat processed foods and dairy products. It is learnt that there is good availability of milk after daily consumption for dairy related activities and processing. Meat is yet another important item of the livestock output.

In the following table-8 district wise source wise total meat production is given:

Table - 8

District Wise Source Wise Total Meat Availability (In Tonnes)

Sr. No.	Particulars	East Khasi Hills	Ri-Bhoi	West Khasi Hills	Jaintia Hills	East Garo Hills	West Garo Hills	South Garo Hills	Total	Source	
										Within the State	Brought from outside the State
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1.	Cattle	12061	1939	2703	1794	1160	2419	664	**22740**	12218	10522
2.	Buffaloes	87	8	0	212	17	238	0	**562**	562	0
3.	Pig	5384	1052	1228	1314	744	964	475	**11161**	9666	1495
4.	Sheep & Goat	641	97	29	200	95	171	79	**1312**	1271	41
5.	Poultry	2804	313	315	432	176	430	88	**4558**	4371	187
6.	TOTAL	**20977**	**3409**	**4275**	**3952**	**2192**	**4222**	**1306**	**40333**	**28088**	**12245**

It can be seen from the above table that the total availability of meat from different livestock species in the year 2013-14 was 40,333 tonnes.Of this 57% came from bovaine cattle (cows, buffaloes), 27% came from pigs (pork) and 11% from poultry. Further analysis of the sources of meat availability shows, that out of 40,333 tonnes 28,000 was produced within the state whereas remaining 12,245 tonnes was brought from outside the state. This shows the opportunity for further meat production by way of proper cattle rearing and other technology.

4.3 Study of Industrial Infrastructure

Availability of infrastructure facilities required by the industries is a key issue in promoting industrial investment and growth for any state. Key infrastructure facilities required are developed land, buildings, power, water, roads, communication facilities and transportation network. Further easy access to and proximity of the market is an important factor for speedy industrial development.

4.3.1 Land and Building

Meghalaya shares 444 kms long international boundary with Bangladesh. Such geographical closeness of the state to Bangladesh implies a unique advantage for setting up of industries based on the demand of the country. Units producing such goods will enjoy a competitive advantage for setting up industries based on demand of the country. Units producing such goods will enjoy a competitive advantage on account of low cost of finished product transport due to market proximity.

To obviate the problem of prospective entrepreneurs in acquiring site for industries, Industrial Estates and Areas have been created and more are likely to come up in the near future. Details of existing Industrial Estates/sites in the state are given in the following table-9.

Table - 9

Existing Industrial Estates

Location	Industrial Estate Area in Acres	Growth Centre Area in Hectares	Acres EPIP/Industrial Area in Acres
Shillong	10.22		
Tura	19.83		
Jowai	14.56		
Williamnagar	15.30		
Mendipather	7.00	36.00	
Nongstoin	10.00		
Byrnihat			259.00 (EPIP)51.00-Extended Area
Umaim			109.67 (IA)

All these places are well connected, having minimum facilities like Road, Power, Water, Hospital, Post, Telegraph, shopping complex, Schools, Collegesetc.

At present there are 8 functional and 2 non-functional Land custom Station in the state through which export-import business/trading activities are being carried out.

4.3.2 Power

In North East India, Meghalaya has the largest hydro-electricity potential, second only to Arunachal Pradesh. The generation transmission, transformation and distribution of electricity is entrusted to the Meghalaya State Electricity Board. Meghalaya is extremely rich in thermal power potential. It has vast coal reserves. This coal is having high calorific value with low ash content but high sulphur content, which is suitable for setting up thermal power projects. Understanding the importance of power as a prime mover for the development of the State, the Government has initiated a number of measures to develop the power sector to its fullest potential for the prosperity of the people.

The river basin of Meghalaya has a potential of about 3,000 Megawatt of hydro-power. The state of Meghalaya is directly influenced by the south-west Monsoon. The average annual rainfall is 12,000mm. All the rivers of Meghalaya are monsoon

fed. The rain water flows down the rugged slopes and narrow valleys and descends rapidly to the plains of Assam and Bangladesh creating extremely favourable conditions for harnessing the hydroelectric power.

Presently the generation, transmission, transformation and distribution of electricity is done by Meghalaya Energy Corporation Limited (MeECL). The generation of power in the state is all hydro. There are seven power stations with a total installed capacity of 228.7 Megawatt (MW).

The state has just sufficient power. However, rapid industrialisationand an improve standard of living should see the electricity consumption rise substantially in the state. Further an ambitious electrification programme seeks to bring power to more areas of the state and this should translate into a greater demand per capita.Availability of power in the North-East is barely 94 kilowatt per hour as against the national average of 330 kilo watt per hour. As of now, the Northeast's total installed capacity of room power from all sources (hydro, coal and gas) stands at 1400 MW as against the all-India total of 85,000MW. This reflects that the power sector can be a boon in this reason.

The Government of Meghalaya has already announced Power Policy, 2007. The objective of this is to make the State power potential in the region. The National & International can Player can play the role of investor. The government is committed to support and facilitate the promotion of Power sector.

4.3.3 Transportation and Communication

- **Transportation**

  Availability of efficient, high quality and dependable transportation network is crucial for both, movement of raw material and inputs from outside the state as well as from within the state and that of finished products to reach market places either within the state or in other states/countries.

  The mode of transportation is primarily rail and road network. Six National Highways pass through Meghalaya. The state has 7328 kms of both surfaced and unsurfaced roads. Due to its hilly terrain, hither to rail transport was precluded and its narrow rivers are not navigable, thereby closing this mode as well. This left road network as only means of bulk transport. For every 100 Sq. Kms of land in Meghalaya there are 36.6 kms of roads.

Rail transport network has been now set up. However, it is at its initial stage of development. Guwahati is the nearest railway station connecting the state to rest of the country through broad gauge track network.

The aviation transport mode is also sparse. The only airport in the state at Umroi, 35 km from Shillong is functional. It is the only airport in Meghalaya having landing facility for smaller aircrafts and is having flight connected with Kolkata, Aizawl and Silchar. Another small airport is planned near Tura. Borjhar, the most important airport in the North-Eastern Sector have facility for bigger jet aircrafts (like Boeing and Airbus) is of a distance of 124 km from Shillong. There is also a helicopter service connecting Shillong to Guwahati and Tura.

- **Communication**

Telecommunication network plays an important role in the economic development of the state by the linkage it facilitates with not only other parts of the state or country but also with various countries of the world.

North-Eastern Telecommunication Circle serves six states in the region including Meghalaya. Conventional service such as telephone and telegraph has been provided in Meghalya and are being expanded. In response to the Government policy to serve rural areas and particularly hilly areas by reliable telecommunication facilities, action has been initiated to provide small electronic exchanges, multi access radio relay system etc.

4.4 Status of Traditional Crafts and Skill Availability

Availability of traditional crafts, skills and level of literacy including high end knowledge based skills play an important role as infrastructure component for promoting high tech businesses for one and strengthening and modernising craft based industries on the other.

Meghalaya being the home land of three of India's ancient hill communities The Khasis, The Jaintias and the Garos , it has a number of traditional skills and crafts as its USP. Some of such skills are in handloom weaving, cane and bamboo making, Handicraft making, tailoring, beekeeping and such other crafts.

On the other hand the states literacy level is one of the highest in the country with urban literacy at 80% and good English knowledge and accent. There are 66

colleges, 6 technical schools and 10 universities as well as institutes of higher learning like RGIIM, NIFT, NIIT, IIHM, IIPS etc. in the state.

Further in order to develop quality, manpower for knowledge based and high technology industry, the government has already announced an Information Technology Policy and attendant Human Resource development initiative in establishing organisation/institute to impart professional and high quality I.T education.

4.5 Policy Environment for industry promotion and growth

Given the enabling environment, the Government of Meghalaya has launched several policy measure and incentives in order to encourage establishment of enterprises and enhance inflow of investment. The state has announced and put in place following key policies.

4.5.1 Meghalaya Industrial investment promotion policy

Meghalaya Government has always endeavoured to set up the right kind of business climate to motivate investments in the State. In order to attract investment to the various sectors and thus contribute to the development of the economy as a whole, the Government of Meghalaya has made several policy announcements. These policies have unveiled a roadmap and graphed a trajectory for bolstering the industrial climate of the State through a package of investment incentives and schemes for the investors.

The major being the industrial policy, which has been announced with a view to take advantage of the liberalised economic scenario in the country and also to keep pace with development in the national industrial sector.

The objectives of the policy are: -

- Generate employment opportunities for the local people in the industries and allied sectors.
- Develop human resources and bring about improvements in the quality of life by promoting industries in sectors where the state has comparative advantage.
- Achieve a balanced and growth oriented development covering the entire state through promotion of village and small scale industries.

- Create a conducive environment for industrial development by creation of the basic Infrastructural facilities and by setting up of industrial areas, growth centre and export promotion industrial park.
- Encourage the setting up of selective medium and large industries by utilising the resource base of the state thereby ensuring sustainable industrial growth but, compatible with ecological imperatives and hence encourage positive efforts towards the regeneration of the environment.
- Provide preference to local entrepreneurship in setting up of large, medium and small-scale units.
- Promote local interests through joint ventures with external investors so as to facilitate technology transfer and capital flow by a package of suitable incentives.
- Encourage need based development of local entrepreneurial skills through intensive motivation and training programmes at district, sub-division and block levels.
- Provide guidance to prospective entrepreneurs by building up a data bank of project-profiles and other connected information.
- Simplify rules and procedures by providing a single-window clearance facility at the District Levels for the Small Scale Sector and at the State Level for Medium and Large Scale Industries.
- Promote the setting up of ancillary units for catering to the requirements of large and medium scale industries.
- Identify sick units that can be made viable and provide a comprehensive package of assistance for their revival.
- Promote and encourage high-value, low-volume products, in view of the transportation-bottleneck in the State.
- Encourage setting up of export-oriented, Agro based, Mineral-based, Horticultural based and Electronic units as thrust area.

4.5.2 The Meghalaya Mines and Minerals Policy

The Meghalaya Mines and Mineral Policy, 2012 is being formulated with a focused mission of sustainable and eco-friendly growth of mineral deposits and mineral based industries with due regard to environment, conservation as well as upliftment of standards of living of the local people in and around the mineral bearing areas.

The basic objectives of the Meghalaya Mines and Minerals Policy, 2012 are the following, namely :

- To facilitate exploration work for accurate reserve estimation of the mineral deposits;
- To develop and exploit mineral resources in a scientific and sustainable manner, taking into account the interest of the state and people;
- To review the existing practice of random exploitation of mineral resources and to regulate mineral exploitation;
- To carry out geological mapping of mineral resources;
- To promote necessary linkages between mining, mineral industry and power generation;
- To promote investment in mining and industry to generate employment for local people;
- To promote research and development activities in mineral sector;
- To ensure establishment of appropriate training facility for human resource development to meet the man power requirement of the mineral industry;
- To minimize adverse effect of mineral development on the environment and ecology through appropriate preventive and control measures;
- To ensure proper conduct of mining operation with due regard to safety and health of all concerned;
- To create a database on mineral resources, both major and minor;
- To take steps to promote geo-tourism;
- To promote private sector participation in various aspects of mineral development, which includes exploration, infrastructure building, mining and other mining related activities and mineral based industries;
- To safeguard the rights of miners, mine owners and mining industry;
- To protect the waterways, like rivulets, rivers and streams, including drinking water sources, aquatic life and safeguard the healthy environment from pollution; and

4.5.3 Meghalaya Tourism Policy

To position Meghalaya as a preferred tourist destination by taking advantage of its rich cultural heritage and natural beauty.

After due consideration of the above key principles, the broad objectives for the development of tourism in the State are as follows:

a) To establish a holistic growth of the industry with the cooperation of the private sector/community and other stakeholders.

b) To develop an effective marketing strategy linked with regional and national initiatives through a collaborative mechanism to project a positive identity for Meghalaya in the national and international tourism markets as a unique preferred destination.
c) To strengthen the quality and attractiveness of tourism experience in Meghalaya including improvements to be brought about in the conservation of the environment.
d) To identify and promote new opportunities for the future development in Meghalaya in Meghalaya on a sustainable basis.
e) To strengthen the cultural aspects of the tourism product in Meghalaya and to actively promote local participation, including community-based tourism.
f) To develop a tourism plan in concurrence with the objectives of the policy.
g) To ensure greater emphasis on capacity building/training to local youth and tourism stakeholders in the state.
h) To ensure acceptable service levels, training and human resource development will be provided on an ongoing basis.
i) To take full advantage of the various institutes in the state like the Indian Institute of Management, Institute of Hotel Management, Martin Luther Christian University, food Craft Institute (Tura), to develop courses and implement training in various categories of service providers.
j) To make the tourism industry in Meghalaya a leader in responsible environmental practices.
k) To establish a set of best practices in the tourism sector.

4.5.4 Information Technology Policy

The Information Technology (IT) vision, mission, objectives, plans and strategies of the Government of Meghalaya as enunciated below has been formulated keeping in view the desirability for accelerating the State's economic development and maximizing the people's benefits through its widespread application in various aspects.

The Government envisages (i) to make Information Technology as a tool for attaining all round development in the State and (ii) to fully participate in the IT revolution to bring prosperity to our people.

The goal is to make the State an IT Hub, whereby generating employment and IT led economic growth.

In order to actualize the vision and mission, the Government's thrust is to make Information Technology the vehicle for productive growth in the State. Productive growth will be classified into three categories (i) IT for all round developmental growth (IT as an aid for Development) (ii) Developmental activities leading to IT related growth (Development of IT sector) and (iii) Improved performance in governance and administration. In the process government aims at achieving the following objectives.

- Making Meghalaya a favoured Information Technology industrial destination in the country, attracting investments from within and outside the country.
- Facilitate the establishment of IT enabled Service Centres in the State.
- Take steps to create a conducive environment for development of IT Sector.
- Use IT to increase the employment potential for the educated youth of Meghalaya.
- Provide special incentives to the entrepreneurs and investors and to remove bottlenecks, problems encountered by them.

Human Resource Development

In order to provide quality manpower for the growth of the IT industry in the state and also for the support of various services:

- The Government will facilitate and play a pro-active role in ensuring professional and quality IT education in the state. In doing so, Government would take steps to ensure that organizations/institutions imparting IT education meet the standards and certifications requirements.

With the help of the IT industry, Government would encourage setting up of IT institutions of repute in the state.

Role of the IT Department: The Information Technology Department performs as a nodal agency, catalytic and facilitating role in all matters relating to IT and also in the implementation of this IT policy.

4.5.5 Integrated Business Development & Livelihoods Promotion Progamme (IBDLP)

To accomplish the common dream of self-sufficient and prosperous Meghalaya, the concept of Integrated Basin Development and Livelihoods Promotion Programme (IBDLP) was conceived. The programme was launched in April 2012 with an objective to facilitate development of livelihood through a participatory approach for

every willing and entrepreneurial spirited individual of the state in an overall framework of sustainability.

Under the programme, the people are considered as development partners rather than beneficiaries, wherein, through various identified interventions, the State Government gives support for up-scaling their knowledge and skill to ultimately transform them to become effective, intelligent and competent partners that provide a comprehensive solution as well as a platform for availing sustainable livelihood opportunities.

Enterprise Facilitation Centres (EFC)

Establishment of Enterprise Facilitation Centre is an idea unique to Meghalaya. EFCs are IBDLP's window to the world.

The centre is a place for the partners to understand about IBDLP and to seek advice on how to improve their livelihood activities. The EFC is the connecting link between the programme and the people. It is 'the' place for partners to understand the processes of IBDLP and become a part of the process of creating a poverty free Meghalaya.

The Enterprise facilitation process is designed to raise aspirations, conduct need assessment and finally roll out the required interventions in partnership with the line departments and banks. Films/Documentaries on successful entrepreneurs and groups in different sectors are available for viewing at the EFCs. The Enterprise Resource Persons (ERP) runs the EFC.

The EFC renders following assistance to existing and prospective entrepreneurs.

1. Information/ facilitation on how to improve your current livelihood activity
2. Support in bank linkage
3. Capacity building and training
4. Support in marketing of produce

As a result of efforts of IBDLP and EFCs, as a integral part of IBDLP, the opportunities identified could be covered into viable business venture by perspective entrepreneurs through financial, entrepreneurial and hence skills related support from EFCs.

4.6 Status Study of Industrial Profile of Meghalaya

In order to identify viable business opportunities, it is essential to study the present status of industries in the state. Meghalaya is a predominant state with more of micro and small enterprises and very small number of medium and large scale industries.

4.6.1 Status of Small Scale Industries

As per the data provided by the department of industries, as of 31 March, 2014, the state had 629 registered small scale units. In the following table-10 distribution of these units in 9 districts of the state is given below:

Table -10

District Wise SSI Units as of 31 March, 2014

Sr. No.	Name of the District	Number of Units
1.	East Khasi Hills	272
2.	East Garo Hills	106
3.	South Garo Hills	67
4.	West Khasi Hills	48
5.	Ri-Bhoi	42
6.	South West Khasi Hills	35
7.	West Jaintia Hills	29
8.	West Garo Hills	25
9.	South West Garo Hills	3
10.	East Jaintia Hills	2
11.	North Garo Hills	0
12.	Total	629

It can be seen that East Khasi Hills is the most populated district in terms of operating SSI units (43%). It is followed by East Garo Hills which has 17% of the total operating SSIs. The third largest district is South Garo Hills which has little more than 10% of units. The rest of the units are distributed in other districts namely West Khasi Hills, Ri-Bhoi, South Khasi, Jaintia, etc. In the year 2012-2013, total number of units registered in the micro, and small category were 493.

In terms of distribution of these units and in terms of product and sectors, it was found that following product/service category form a major part of these 629 units. In the following table-11 product wise details of units in major categories is given.

Table - 11

Distribution of Product/Services

Sr. No.	Name of product/services	Number of Units
1.	Handicraft	96
2.	Tailoring/embroidery	88
3.	Beetel-nut preservation	60
4.	Handloom Weaving	45
5.	Cane/bamboo work	44
6.	Steel based products/fabrication	29
7.	Blacksmithy	20
8.	Stone products	17
9.	Computers and allied services	15
10.	Beauty parlour	10
11.	Bee Keeping and honey	10
12.	Total	434

The above table shows that out of 629 total units, majority of the units are in activities like handicraft, tailoring and allied services, beetel-nut preservation, handloom weaving, cane and bamboo making, etc. These are mostly traditional businesses. In addition to this, there is also some presence of technology and skill based products like computers and allied services, steel fabrication, beauty parlours, etc.

4.6.2 Status of Medium and Large Enterprises

As stated earlier, the state does not boast of a good number of medium and large scale enterprises. This is due to several constraints such as lack of good quality infrastructure like roads, transportation, till recently, power and lack of availability of diverse industrial raw materials as well as high skills. Mineral being the only important natural industrial resource, the medium and large units that came up in Meghalaya was primarily based on the availability of the minerals like limestone, coal

and granite. Therefore a number of cement plants, clinker units have came up. In Annexure-V, details of major medium and large scale units in Meghalaya is given.

Meghalaya has about 92 medium and large scale enterprises. Ri-Bhoi has the largest number of medium and large scale units numbering 76 units. This is followed by Jainitia Hills which has 13 units. As can be seen from Annexure-V, in addition to the units, clinker and cement manufacturing, medium scale units are mostly in products like LAM Coke and coca breeze, plastic bags, steel and steel related products, MS Ingots, animal and poultry field and ferric silicon. There are no large and medium scale units in other districts. It can be seen that sectors like tourism, healthcare, packaging materials, food processing and allied, computer and allied, are practically non-existent in the state although, requisite raw material resource skills, and environment is existing for such businesses. Study of entrepreneurial interest from within the state has been captured by various EFCs throw light into potential areas of business opportunities. In the table-12below analysis of sector wise interest and intervention sought by entrepreneurs is recorded by EFCs is given.

As can be seen out of 21294, people seeking intervention the highest number (7812) showed interest in livestock livelihood opportunities. This was followed by non-farm sector for which 4052 persons has shown interest. The third was forestry (3830) and the fourth largest was aquaculture (2151) followed by horticulture (2075). This analysis gives some indication with regard to perception of people on livelihood potential sectors.

Table - 12

Sector-wise Summary Report

District	EFC Centre	Footfalls @ EFC	No. of People Seeking Intervention in:										
			Agriculture	Horticulture	Livestock	Aquaculture	Apiculture	Sericulture	Non-Farm	Soil & Water	Energy	Tourism	Forestry
South West Garo Hills	Zikzak	5876	2	115	354	252	16	53	31	7			239
	Betasing	2018		120		98	4	53	223				45
West Garo Hills	Rongram	1116		192	418	151	12	58	71		11	5	116
	Selsella	5035		14	40	10		1	2				29
South Garo Hills	Baghmara	2200		370	474	145	7	8	54	17	4	6	278
	Gasuapara	2376		71	203	134		15	141				149
	Chokpot	2014	7	83	238	95	2	9	75			2	176
	Rongara	1747		110	169	62	4	5	103	3	3	4	304
East Khasi Hills	Pynursla	113	1	65	130	25	30	1	74			7	45
	Laitkroh	521		21	103	4	28		65			2	34
	Mawphlang	2868		133	1315	90	15	7	426	2			5
	Mawryngkneng												
East Garo Hills	Samanda	3246		65	419	59	5	193	367	1		1	58
North Garo Hills	Resubelpara	7232		268	1481	697	2	141	1462				1910
	Kharkutta	953											
West Jaintia Hills	Amlarem	387	2	35	86	21	10		47				4
	Laskein	470	1	55	125	22	16	78	46				17
	Thadlaskein	2403	17	171	695	62	15	92	364	3			131
East Jaintia Hills	Khliehriat	145	1	15	61	19	1	2	14		1		1
	Saipung	59			17	4		1	13				
West Khasi Hills	Mairang	1408	12	66	529	43	5	6	254	4			33
	Nongstoin	113		8	35	5	1				1	1	1
	Mawthadraishan	488	2	30	113	30	6	7	67	4	1		
	Mawshynrut	987	2	68	79	23	5	8	31		4	1	8
South West Khasi Hills	Mawkyrwat	1472	226	670	91	40	2	102	22	2	8	244	
Ri Bhoi	Umling	282	1	59	58	9	6	4	20				3
Total		**45529**	**273**	**2075**	**7812**	**2151**	**230**	**744**	**4052**	**63**	**27**	**37**	**3830**
TOTAL NO. OF PEOPLE SEEKING INTERVENTION													
21294													

1.6 Potential Business Opportunities

Based on the analysis of availability of resources, raw materials, existence of required infrastructure, and availability of skills and most importantly analysis of demand supply status of Meghalaya for major consumer and non-consumer products and services, we have been able to identify following major sectors of potential business opportunities.

1.6.1 Agro and Horticulture

The potential for agro-based industries in the state of Meghalaya is phenomenal. The state produces substantial quantities of oranges, peaches, pineapples, pears, guavas, plums and bananas of superb table variety. It also grows plenty of potatoes, tapioca, bay leaves, ginger, maize and jackfruit. It grows plenty of potatoes and produce little over 1.19 lakh metric tons of potatoes. Turmeric, particularly the Shangpung variety is grown. Meghalaya climate is congenial for animal husbandry like rearing of cattle, pigs, goats and poultry. Plantation crops like coffee, rubber, black-pepper and arecanut are also becoming important products. But a major breakthrough has been made in tea cultivation. As the tea is grown in relatively high altitudes, its quality is similar to the Darjeeling tea.

Meghalaya has vast potential for development of food & fruit processing industries.

- Mushroom cultivation and processing
- Tea processing
- Fruit processing
- Ginger dehydration and ginger processing plant
- Cashew nut processing
- Spice oleoresins
- Tomato based products
- Starch and starch-based products
- Processing of potato into potato chips
- Manufacture of industrial alcohol from tapioca/maize and potato tubers
- Soya milk
- Slaughterhouse and meat processing plant
- Setting up of a poultry centre for production of 10 million eggs and 1 million broilers.

1.6.2 Mineral Based

Meghalaya with its wealth of mineral deposits in the form of coal, limestone, kaolin and small quantities of sillimite, bauxite, basemetals and apetite, is a storehouse of industrial potential. Coal deposits can be found in the districts of Garo Hills, West Khasi Hills, and Jaintia Hills. This coal bears low ash content and its calorific value ranges from 6500 to 7500 kcal/kg. The coal is mainly of sub-bituminous type and can be utilized in varied industries ranging from power, fertilizer, cement and textile of paper, rubber, brick burning and pottery based industries. The coal that is found in the state can also be converted into coke and recover value added chemicals like light, medium and heavy oil, phenol, xynelol and producer gas. Limestone is another mineral that occurs in an extensive belt along the southern border of Meghalaya. The quantity of limestone in the state has CaO content of 53% and can be of great use to the steel, fertilizer and chemical industries.

Based on the minerals available in Meghalaya, a number of industries may be set up and out of many; the following are worth-mentioning:

- Cement
- Lime and Hydrated Lime
- Precipitated and Activated Calcium Carbonate
- Calcium Carbide
- Bleaching Powder
- Acetylene Black
- Formed Coke
- Low-Temperature Carbonisation Plant
- Coal Briquette and High temp. Carbonisation Plant
- Low Ash Coke
- Generation of Producer Gas

1.6.3 Tourism

Meghalaya with its hilly terrain and cool climate, demonstrates good potential for development of tourism. This hilly state has been called ‘a patch of beauty and grace’ and is famed as ‘the Scotland of the East’. It is linked to the Borail Range, an offshoot of the Himalayan Mountains. Meghalaya has an edge over other tourist centres in the Northeast as it has unique blend of different cultures, congenial

climatic conditions and better infrastructures for setting up of tourism related activities.

The capital of Meghalaya, Shillong is one of the most popular tourist destinations. Situated at an altitude of 1,496 meters above sea level, Shillong is perhaps the only hill station with motorable roads leading to every corner. The tourists spots in Shillong include, Ward's lake, Lady Hydari Park, Polo ground, Mini zoo, Elephant falls, etc. Cherrapunjee, locally and officially known as Sohra, is 56 kms from Shillong, and a 'must see' destination for all tourists.

In the following table-13, data of domestic and foreign tourist arrivals in Meghalaya during last five years is given. It can be seen that in the year 2013, the total number of tourists arrived was close to Rs.7 lacs, nearly 95% of these were domestic tourists. However, the average study of most of the domestic tourists is less than one day.

Table - 13

Statistical Data of Domestic and Foreign tourist arrivals in Meghalaya

Year	No. Of Domestic Tourist	No. Of Foreign Tourist	Total
2009	5,91,398	4,522	5,95,920
2010	6,52,756	4,177	6,56,933
2011	6,67,504	4,803	6,72,307
2012	6,80,254	5,313	6,85,567
2013	6,91,269	6,773	6,98,042

Tourism has been considered to be the gateway to economic development of the state. Meghalaya offers enormous potential for employment and economic growth by utilizing the natural attractions like landscapes, mountains and peaks, beaches, rivers, waterfalls, flora and fauna. It also applies to a multitude of man-made attractions like monuments, places and unique rural and city environment. Tourism development has been recognized as a thrust area by the Government of Meghalaya. Hence, the State Government has announced a tourism policy which aims at projecting a friendly tourist image of the state to the world at large and makes the State one of the best tourist destinations of the country by capitalising on the State's natural assets; managing them properly and creating a consistent competitive advantage.

Meghalaya also offers many adventure tourism opportunities in the form of mountaineering, rock climbing, trekking and hiking, water sports, etc. The state offers several trekking routes some of which also afford an opportunity to encounter some rare animals such as the slow Loris, assorted deer and boats, cruise-boats, water-scooters and speedboats.

Potential areas of the future development of tourism products in Meghalaya include:

- **Adventure/Sports Tourism**: Meghalaya has immense potential for adventure related activities including adventure sports like rock climbing, paragliding, zip lining, mountain climbing, canoeing, water skiing, etc. Some of the popular adventure activities being promoted in the state are hard and soft treks, rock climbing, boat race and indigenous sports of the Khasis, Jaintias and Gaors. Caving at present is the most vibrant and visible tourism activity in the state, followed by nature walks and treks on the numerous living root bridges.
- **Widelife/Eco-Tourism**: With a large area of the state covered forest, Meghalaya has diverse wildlife. Apart from the well known Balpakram National Park in South Garo Hills, there are the Nokrek Biosphere Reserve (West Garo Hills), the Siju Wildlife Sanctuary (South Garo Hills) and the Nongkhyllem Wildlife Sanctuary in Ri-Bhoi District.
- **Meeting, Incentives, Conventions & Exhibition Tourism (MICE)**: Meghalaya being one of the preferred destinations of the North East, and with tourist arrival increasing substantially every year, the demand for facilities for MICE has also increased. The Department will take steps for setting up modern convention facilities at strategic locations.
- **Wellness, Health & Herbal Tourism**: Spa holidays are becoming popular these days. Meghalaya has immense potential in this segment and can be a leading player in health and wellness tourism where professionally devised programmes can be initiated and delivered like yoga centres, ayurvedic treatments, rejuvenating treatments, etc.
- **Village/Rural Tourism-Home Stay**: Village/Rural tourism has emerged as a new concept in the tourism industry. In this context, Meghalaya is fast evolving as a responsible and sustainable tourism product with an important social objective through people's participation. Rural tourism can be effectively implemented to boost tourism in the state. Rural tourism will

ensure the dispersal of tourists from the city to villages enabling them to familiarise themselves with the unique culture and heritage prevalent so that they are rejuvenated and culturally enriched.

1.6.4 Education and Information Technology (IT) Related

As mentioned in the earlier section of this report, Government of Meghalaya has already announced Information Technology Policy. The goal of the policy is to make the state an IT hub which can lead to establishment of IT related enterprises and generate employment.

In view of the steps taken to enhance and strengthen IT based education as well as industrial infrastructure, scope for IT and IT related service enterprises as well as manufacturing companies has increased. Additional enabling factors in the state are 80% urban literacy and good knowledge of the English language would create further conducive scenario.

Similarly, the education sector also offers great potential to start education related service enterprises. Considering the high literacy rate as stated above as well as existence of good number of institutions and colleges of higher learning and technical education, the supply of skilled manpower is good. Further, the demand for more education related services as well as providers of vocational training has also increased.

In view of the above, following areas of potential investment have been identified in this sector.

Information Technology& IT Related Service Industries

- Call Centres with minimum investment of Rs. 1.00 crore in equipments.

Education

- Vocational Training Centre (recognized by State Educational Department or Central Government)
- Recognized schools up to Class XII Standard/Colleges by the State/Central Government)

1.6.5 Healthcare

As can be seen from the status study of industrial profile of the state, there is little investment so far in the healthcare sectors. The need for high quality healthcare providers particularly in the private sector is increasing in light of gradual industrialization, increase in lifespan as well as in routes of life style changes.

Further, the state has adequate availability of skilled manpower both in the pharmacy as well as nursing care sector. In view of the above and considering the green field status, following investment opportunities have been identified to be perceived by entrepreneurs.

- Nursing home (with minimum 25 beds)
- Super-Speciality Health Care with diagnostic Centre where investment in equipments is not less than Rs. 5.00 crores.

1.7 Limitations of the Study and Critical Advisory

No study of Business Opportunity Identification (BOI) can claim perfection and total accuracy in terms of the projections of business opportunities. While we have done a very exhaustive study of the state of Meghalaya, particularly four to five important and high potential districts, as well as we have looked into all possible sources of information, both printed and expert individuals, in identified business ideas, there is always a possibility that the team might have left a few sectors here or there.

We therefore, would like to record that the study might have limitations of such nature. Further, any BOI study is primarily meant to throw open a basket of well-considered, asset opportunities as a guideline to perspective entrepreneurs. Further, in preparation of profiles, while due care is taken to use the real time data related to costing, pricing and taxation, the profile is never a substitute of detail project report or techno economic feasibility study. It is therefore necessary for us to put on record advisory to all perspective entrepreneurs who use this document to keep in mind the fact that the project profiles data is mentioned more as a ground step to do further project specific work and prepare a bankable proposal.

4.9 Project Profiles

The list of projects identified by us with information on total project cost is given below in Table - 14.

Table - 14

List of Project Profiles

Sr. No.	Name of Product/Services	Project Cost (Rs. In lacs)	Page No.
1.	Jackfruit Products	13.00	48
2.	Lime Processing	152.00	44
3.	Mushroom Processing	12.15	60
4.	Potato Processing	9.76	65
5.	Rice Mill	13.64	71
6.	Spice Grinding	9.48	76
7.	Bee Keeping	1.55	81
8.	Cakes and Pastries	11.97	87
9.	Cold Storage	31.48	92
10.	Mustard Oil	11.33	96
11.	Mustard Powder	20.80	110
12.	Passion Fruit squash	10.94	105
13.	Pineapple	189.78	109
14.	Pineapple and Orange Products	11.75	115
15.	Bleached and Dehydrated Ginger	6.30	119
16.	Solar Dryers	11.18	124
17.	Solar Lanterns	6.11	131
18.	Solar Photovoltaic Gadgets	6.15	135
19.	Solar Hot Water Systems	5.78	140
20.	Packaged Drinking Water(Mineral Water)	127.11	146
21.	Sericulture	0.35	153
22.	Pig Rearing	2.13	159
23.	2-Octanol	175.25	164
24.	Beaten Rice	13.31	171
25.	Canned Bamboo Shoots	13.44	176
26.	Chilli Pickles	3.45	181
27.	Fish Meal	14.45	185
28.	Tamarind Powder	9.00	190
29.	Betel Nuts	14.75	193
30.	Cashew Processing	11.00	199
31.	Consumer Electronics	3.62	204
32.	Multi-Purpose Computer centre for IT enabled services Cyber Cafe	10.48	209
33.	Bamboo Products	0.44	217
34.	Medicinal & Aromatic plants	0.83	221
35.	Ground Minerals	23.80	225
36.	Meat Gravy Concentrate	19.58	231
37.	Granite Tiles Unit	16.04	239
38.	Lime Kiln	1.63	243
39.	Honey based Beverages	18.80	247
40.	Honey Cream Manufacturing	7.34	250

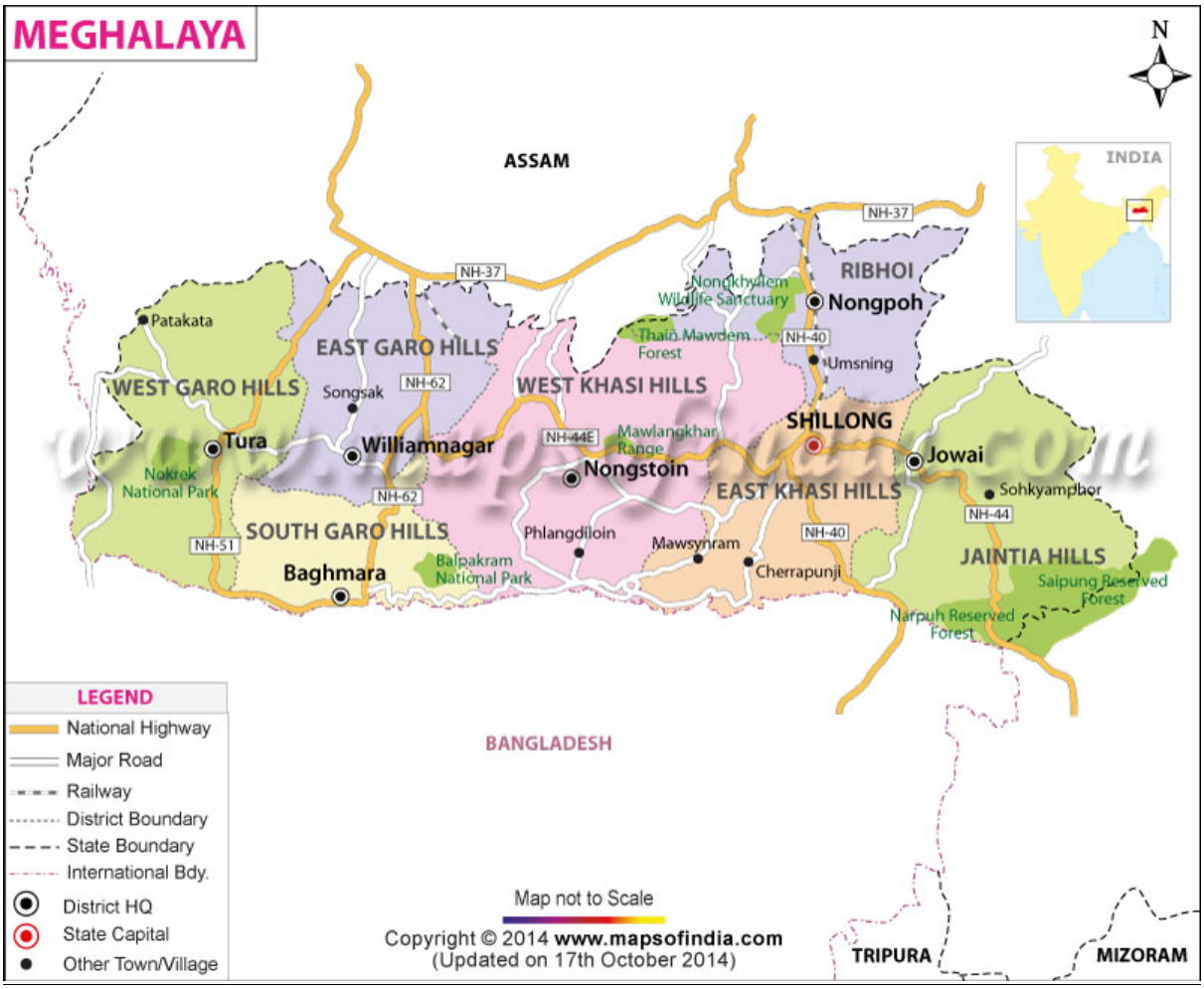
Sr. No.	Name of Product/Services	Project Cost (Rs. In lacs)	Page No.
41.	Honey Jam Manufacturing	5.48	253
42.	Honey Jelly Manufacturing	5.29	256
43.	PP Files and Folders	49.45	259
44.	HDPE Lube Oil Container	29.70	265
45.	LLDPE Zipper bag	65.00	270
46.	LLDPE Agriculture Film	97.00	274
47.	LLDPE Printed Shopping Carry Bag	83.00	278
48.	Tourist Village	15.00	283
49.	Spa Services	8.10	288

Detailed project profiles are at Annexure-6 to this report.

ANNEXURES

Annexure – 1

Meghalaya Map



Annexure – 2

Format of Secondary Data Collection of Industries

Published Data on Micro, Small, Medium and Large Enterprises in Meghalaya (As Of 31 March, 2014)

Name of the District	Micro		Small		Medium		Large	
	No. of enterprises	Production value in Rs. Lacs	No. of enterprises	Production value in Rs. Lacs	No. of enterprises	Production value in Rs. Lacs	No. of enterprises	Production value in Rs. Lacs
Ri Bhoi								
East Khasi Hills								
West Khasi Hills								
Jaintia Hills								
East Gargo Hills								
West Gargo Hills								
South Gargo Hills								

Distribution of Micro, Small, Medium and Large Enterprises in Terms of Products/Services (As Of 31 March, 2014)

* Name of the Product Groups/Services	Number of Units							Total
	Ri Bhoi	East Khasi Hills	West Khasi Hills	Jaintia Hills	East Garo Hills	West Garo Hills	South Garo Hills	
Consumer products								
Plastic and packaging materials								
Food processing								
Dairy and allied products								
Electrical goods								
Engineering services								

* Name of the Product Groups/Services	Number of Units							Total
	Ri Bhoi	East Khasi Hills	West Khasi Hills	Jaintia Hills	East Garo Hills	West Garo Hills	South Garo Hills	
Tourism services								
Horticulture based processing and allied								
Hotel, restaurant, travel agencies and allied								
Goods transportation								
Repair and maintenance (automobile, household appliances, mobile, engineering etc.)								
Others								

Annexure – 3

List of Secondary Data Sources Referred For Study

Sr. No.	Description	Name of the Source
1.	Meghalaya Investment potentials	Directorate of Commerce & Industries
2.	Meghalaya Industrial & Investment Promotion Policy, 2012	Directorate of Commerce & Industries
3.	Guidelines – National Mission on Food Processing (NMFP) 2012-13	Directorate of Commerce & Industries
4.	Meghalaya Beckons	Directorate of Commerce & Industries
5.	Chayote Packages of Practices	State Institute of Rural Development Nongsder, Meghalaya
6.	Meghalaya Travel Guide	Meghalaya Tourism
7.	Beekeeping Resource Manual for Beekeepers of Meghalaya	Prof. L.R. Verma Meghalaya Basin Development Authority
8.	The Meghalaya Mines and Minerals Policy 2012	Department of Mining and Geology, Government of Meghalaya
9.	Meghalaya Mineral Resources – An Informative Brochure	Department of Mining and Geology, Government of Meghalaya
10.	Tourism Policy, 2011	Department of Tourism, Government of Meghalaya, Shillong.
11.	Integrated Basin Development and Livelihoods Promotion Programme	Meghalaya Basin Development Authority
12.	Report on Integrated Sample Survey for Estimation of Production Milk, Egg and Meat (2013-14)	Directorate of A.H. & Vetinary Department, Government of Meghalaya.
13	Number of Registered Factories by Industries	S.S.I
14.	List-Target Area, Production and Yield of Agricultural Crops & Horticulture Crops	Government of Meghalaya, Directorate of Agriculture.
15.	Livestock census 2007	Directorate of A.H. & Veterinary Department, Government of Meghalaya.
16.	Annual Administrative Report (2013-14)	Directorate of A.H. &Veterinary Department, Government of Meghalaya.
17.	Details of Cluster formed by Sericulture and weaving Handloom	Directorate of Sericulture and Weaving, Govt. of Meghalaya
18.	Statement showing Number of Regisered SSI Units in Meghalaya w.e.f 1 April, 2009 to 31 March, 2010	Directorate of Commerce & Industries, Government of Meghalaya

Annexure – 4

List of Resource Persons Interviewed For Study

Sr. No.	Name & designation of person	Name of unit/organisation	Contact details
1	Dr. P G Rao Vice Chancellor	University of Science & Technology Meghalaya	Cell: 9435052702 9854057251 Email: pgrao24@hotmail.com vcustm@gmail.com
2	Mrs.M.B.Roy Joint Director	Directorate of Commerce & Industries , Government of Meghalaya	Cell: 09436312553 Tel: 0364-2226253 Email: mbroy59@yahoo.com
3	Shri W. Langstang Director	Commerce & Industries Department, Government of Meghalaya, Shillong	Cell: 09436164619 Tel: 0364-2226253 Email: cimeghalaya@gmail.com
4	Shri J. Gashnga Deputy Director	Directorate of Commerce & Industries department, Government of Meghalaya, Shillong	Cell: 094361-06379 Email:J_gashnga@yahoo.com
5	B K Sohliya (M.A.S) Officer on Special Duty & Chief General Manager	Meghalaya Institute of Entrepreneurship Meghalaya Basin Development Authority, Meghalaya Basin Management Agency	Tel: +91- 0364- 2501407 Cell: +91-9856010113 Email: mieshillong@gmail.com sohliya@gmail.com
6	K J Venkata Nagaraja Assistant General manager	State bank of India	Tel: 0364-2223123 Cell: 89740-65899 Email: kjv.nagaraja@sbi.co.in
7	Deepak Kumar Lalla Deputy General manager	State bank of India	Tel: 0364-2224071 0364-2506035 Cell: 08811060002 Email: dgmbo.zosil@sbi.co.in
8	Wanbor Nongspung	Lakadong Turmeric, Pickles, Squash and Jams	Cell: +91-9436170261 +91- 9612973189 Email: kingoflakadong@gmail.com
9	Rishan Rapsang	Jaiaw Langsning	Tel: 0364-2548097/0364-2548297
10	Jadashisha. L. Wankhar	Bake a Holic	Cell: +919856122814

Sr. No.	Name & designation of person	Name of unit/organisation	Contact details
11	Banteilang Singh Rumnong Deputy Director & Senior Faculty	State Institute of Rural Development	Cell: +91 9612166358 +91 8575015368 Email: banteilang@gmail.com
12	Ramesh Bawri President	Confederation of Industries of Meghalaya	Tel: 0364-2224560 Cell: 9436116456 Email: rbawri@gmail.com
13	Michael Syiem Joint Director	Department of Agriculture Meghalaya Shillong	Tel: 0364-2221213 Cell: 09436703707 Email: msyiem_2009@yahoo.com
14	Dr. J.S. Jyrwa Director	Animal Husbandary & Veterinary Meghalaya	Tel: 0364-2548388 (O) 0364-2505342 (R) Cell: 9436100829 Email: meghvety@gmail.com
15	Shri Bakul Ch. Hajong Director	Sericulture & Weaving Government of Meghalaya, Shillong	Tele Fax: 0364-2223279 Cell: 09436101372 Email: dirswgovt_megh@hotmail.com
16	Jadashisha.L.Wankhar	Bake a Holic	Cell: +919856122814
17	Eva S. Pariat Deputy Director	Directorate of Tourism Government of Meghalaya, Shillong	Cell: +91-9863254771 Email: meghtourism@gmail.com
18	Mylliem Marbaniang	Soilyna Huts	Cell: 9436337741
19	Mr. W.Mawlong Author		Cell: 9774309264
20	M.S Lyngdoh Director	Department of Mineral Resources, Meghalaya, Shillong	Cell: 9436110736 Email: msanlyngdoh@gmail.com
21	Y.S Shullai Manager/Chief Wildlife warden	Indian Forest Service	Cell: 9436999121 Email: wildlifemegh@yahoo.com
22	Kinsty Mawlong	Kristy Soap Industry	(M): +91-8014935919
23	Menovah Synshar Cooper Pathaw & Michael Kharbudon	Earle Holiday Home	(M): +91-9089184830 +91-9863302149 Email: earlehh@rediffmail.com

Annexure – 5

List of Medium &Large Scale Units

a. EAST JAINTIA HILLS DISTRICT

Sr. No.	Name of Unit	Location	Activity & Capacity
1.	M/s. Meghalaya Cement Ltd.	Thangskai	Clinker & Cement
2.	M/s. Jaintia Coke Pvt. Ltd.	Nongsning	LAM Coke & Breeze Coke
3.	M/s. JUD Cement Ltd.	Wahiajer, Narpuh Elaka	Clinker & Cement
4.	M/s. Jaintia Cement Ltd.	Umpleng, Latyrke, Sutnga	Cement
5.	M/s. Abhi Coke Pvt. Ltd.	Lad Rymbai	LAM Coke & Coke Breeze
6.	M/s. Megha Technical & Engineers Pvt. Ltd.	Lumshnong	Cement
7.	M/s. Cement Manufacturing Company Ltd.	Lumshnong	Clinker & Cement
8.	M/s. Hills Cement Company Ltd.	Mynkre	Clinker & Cement
9.	M/s. Meghalaya Miners & Mines Ltd.	Lumshnong	Crushed Limestone
10.	M/s. Adhunik Cement Ltd.	Umsoo – Mutang, Thangskai	Clinker & Cement
11.	M/s. Green Valliey Industries Ltd.	Nongsning Village	Clinker & Cement
12.	M/s. Amrit Cement Industries Ltd.	Umlaper, East Jaintia Hills District	Clinker & Cement
13.	M/s. Star Cement Meghalaya Ltd.	Lumshnong, East Jaintia Hills District	Clinker @ 1.75 million tonnes per annum

b. RI-BHOI DISTRICT

Sr. No.	Name of Unit	Location	Activity & Capacity
1.	M/s. Shree Sai Rolling Mills (India) Ltd.	Rangsakona, Byrnihat	TMT Bars & Flats
2.	M/s. Umadutt Industries	Amjok, Byrnihat	HDPE/PP bags
3.	M/s. Dyna Roof Pvt. Ltd.	10th Mile, Mawsmai	Colour coated profile sheets, galvanized corrugated iron sheets & iron ridging
4.	M/s. A.A. Nutritions	Mawsmai	Yummy noodles
5.	M/s. K.K. Beverages Pvt. Ltd.	9th Mile, Baridua	Packaged drinking water and carbonated & non-carbonated sweetened drinks
6.	M/s. Anabond Limited	9th Mile, Baridua	Adhesives

Sr. No.	Name of Unit	Location	Activity & Capacity
7.	M/s. Jai Kamakhya Alloys Pvt. Ltd.	Umtru Road, Byrnihat	Ferro Silicon
8.	M/s. Meghalaya Bitchem Pvt. Ltd.	9th Mile, Killing Road, Baridua	Cationic Emulsion and Crumb Rubber Polymer modified Bitumen cold mix
9.	M/s. Shree Sai Prakash Alloys Pvt. Ltd.	Rangsakona, Byrnihat	MS Ingots/Billets/TMT Bars
10.	M/s. Shree Sai Smelters (India) Ltd.	Rangsakona, Byrnihat	MS Ingots
11.	M/s. Utkarsh Trexim Pvt. Ltd.	15th Mile, Byrnihat	Panel Door/Solid wood and Finger joining Board
12.	M/s. Shillong Ispat & Rolling Mills	13th Mile, Tamulkuchi	MS Ingots
13.	M/s. Jai Plastech Pvt. Ltd.	Rajabagan, Byrnihat	Disposable Plastic cups and glasses
14.	M/s. Shivani Ispat & Rolling Mills Pvt. Ltd.	13th Mile, Tamulkuchi, Byrnihat	MS Bards, angles, flats
15.	M/s. Satyam Alloys	13th Mile, Tamulkuchi, Byrnihat	Ferro Silicon
16.	M/s. Pawan Castings (Meghalaya) Pvt. Ltd.	Harlibagan, Byrnihat	MS Ingots/TMT Bars
17.	M/s. Shree Mahabir Foods Ltd.	Umpher, Byrnihat	Atta, Maida, Suji, Bran
18.	M/s. Milestone Beverages Pvt. Ltd.	13th Mile, Tamulkuchi, Byrnihat	IMFL
19.	M/s. Umadutt Industries	Amjok, Byrnihat	P.U. Foam
20.	M/s. Meghalaya Cast & Alloys Pvt. Ltd.	Harlibagan, Byrnihat	MS Ingots
21.	M/s. Pioneer Carbide Pvt. Ltd.	Upper Balian, Byrnihat	Ferro Silicon
22.	M/s. Satya Megha Ispat Pvt. Ltd.	13th Mile, Tamulkuchi, Byrnihat	MS Ingots
23.	M/s. N. R. Roller Flour Mill	Them Marwet, Khanapara	Wheat Products
24.	M/s. Hindustan Coca	15th Mile, Byrnihat	Aerated drinks
25.	M/s. Shyam Century Ferrous	EPIP, Byrnihat	Ferro Silicon
26.	M/s. Kakarania Innovative Systems Pvt. Ltd.	EPIP, Byrnihat	Polythene bags (food based)
27.	M/s. Byrnihat Ispat Pvt. Ltd.	EPIP, Byrnihat	MS Ingots
28.	M/s. Meghalaya Mineral Products	EPIP, Byrnihat	MS Rods & bars
29.	M/s. H. M. Cement Ltd.	Upper Balian, Byrnihat	Clinker & Cement
30.	M/s. Pawan Ispat (Meghalaya) Pvt. Ltd.	Harlibagan, Byrnihat	MS Ingots
31.	M/s. Jaintia Alloys Pvt. Ltd.	13th Mile, Tamulkuchi, Byrnihat	MS Ingots

Sr. No.	Name of Unit	Location	Activity & Capacity
32.	M/s. Bimla Ispat Pvt. Ltd.	13th Mile, Tamulkuchi, Byrnihat	MS Ingots
33.	M/s. Shree Sai Megha Ispat Pvt. Ltd.	Rangsakona, Byrnihat	MS Ingots
34.	M/s. Anirudha Steel Pvt. Ltd.	EPIP, Byrnihat	MS Ingots and MS Rods & bars
35.	M/s. Seven Sisters Plastics Pvt. Ltd.	Amjok, Umtru Power House Road, Byrnihat, Ri-Bhoi district	PP Bags & Fabrics
36.	M/s. SRM Plasto Pvt. Ltd.	Umian Industrial Area, Umiam, Ri-Bhoi District	PVC Pipes (Hardware & Electrical)
37.	M/s. CMJ Breweries Pvt. Ltd.	Extended EPIP, Byrnihat, Ri-Bhoi District	Beer
38.	M/s. Sriram Wire Products (Meghalaya)	13th Mile, Tamulkuchi, Byrnihat-793101, Ri-Bhoi District, Meghalaya	MS Black Wire & Wire Nails
39.	M/s. Megha Food Products	9th Mile, Baridua, Ri-Bhoi District	Cattle & Poultry feeds
40.	M/s. RNB Cements Ltd.	Umiam Industrial Area, Ri-Bhoi district	Clinker & cement
41.	M/s. Nezone Pipes & Cola Beverages Pvt. Ltd.	Extended EPIP	MS Black & Galvanized pipes
42.	Cola Beverages Pvt. Ltd.		
43.	M/s. Marak Plastics Pvt. Ltd.	15th Mile, Byrnhibat	PP/HDPE Woven sacks & fabrics
44.	M/s. Megha Plast Pvt. Ltd.	15th Mile, Byrnhibat	PP/HDPE Woven sacks & fabrics
45.	M/s. Timpack Pvt. Ltd.	15th Mile, Byrnhibat	Bamboo Mat Board, Bamboo particle board and Bamboo mat corrugated sheet
46.	M/s. York Print Pvt. Ltd.	9th Mile, Amerigog	Printed cartoons & leaflets
47.	M/s. Surya Alloy Industries Pvt. Ltd.	13th Mile, Tamulkuchi, Byrnihat	Inserts, rail clips, metal liner & GRSP
48.	M/s. Meghalaya Feed Products	9th Mile, Baridua	Animal and Poultry feeds
49.	M/s. RNB Carbide & Ferro Alloys Pvt. Ltd.	Umiam Industrial Area	Ferro Silicon
50.	M/s. S.M. Polypack Industries	Umiam Industrial Area	PP/HDPE Woven sacks
51.	M/s. Greystone Ispat Ltd.	EPIP, Byrnihat	MS Rods
52.	M/s. Kamakshi Ispat Pvt. Ltd.	EPIP, Byrnihat	MS Ingots
53.	M/s. Mainthan Alloys Ltd.	EPIP, Byrnihat	Ferro Silicon and Silicon Manganese
54.	M/s. Greystone Strips Ltd.	EPIP, Byrnihat	Angles, channels, joists

Sr. No.	Name of Unit	Location	Activity & Capacity
55.	M/s. Commercial Iron & Steel Co. Pvt. Ltd.	EPIP, Byrnihat	MS Ingots
56.	M/s. Nezone Industries Ltd.	EPIP, Byrnihat	GI Pipes
57.	M/s. F.W. Ferro Tech Pvt. Ltd.	EPIP, Byrnihat	MS Ingots
58.	M/s. Nalari Ferro Alloys Pvt. Ltd.	EPIP, Byrnihat	Ferro Silicon
59.	M/s. Trikuta Ferro Alloys Pvt. Ltd.	EPIP, Byrnihat	MS Ingots
60.	M/s. Khasi Alloys Pvt. Ltd.	EPIP, Byrnihat	Ferro Silicon
61.	M/s. Brahm India Pvt. Ltd.	EPIP, Byrnihat	MS Ingots
62.	M/s. Purbanhchal Alloys Pvt. Ltd.	EPIP, Byrnihat	Ferro Silicon
63.	M/s. Meghalaya Steels Ltd.	EPIP, Byrnihat	MS Rod & bars
64.	M/s. Greystone Smelters Ltd.	EPIP, Byrnihat	MS Ingots
65.	Structures	Byrnihat	Steel Tubular Poles and Steel Structures
66.	M/s. NTL Steels	EPIP, Byrnihat	Galvanized Steel Tubular Poles & Steel Structures
67.	M/s. K. R. Polymers	Umiam Industrial Area, Umiam	PVC Pipes & Fittings
68.	Ri-Bhoi Ispat & Rolling Mill (P) Ltd.	13th Mile, Tamulkuchi, Byrnihat, Ri-Bhoi District	MS Ingots

c. NORTH GARO HILLS DISTRICT

Sr. No.	Name of Unit	Location	Activity & Capacity
1.	M/s. Milestone Concrete Pvt. Ltd.	Adokgiri	Stone Chips
2.	M/s. Billennium Cement Ltd.	Damas	Cement
3.	M/s. Vigro Cements Ltd.	Damas	Clinker &Cement

N.B: There are no large and medium scale industries in East Khasi Hills, West Khasi Hills, West Jaintia Hills, West Garo Hills, South West Garo Hills, South West Khasi Hills, East Garo Hills and South Garo Hills

Annexure – 6

(1)

PROJECT PROFILE OF JACKFRUIT PRODUCTS

1.0 INTRODUCTION

Jackfruit is a typical Indian fruit mainly grown in West Bengal, Bihar, Meghalaya and West coast. The project can be set up in any of these States. Fully ripe jackfruit is sweet and has exotic flavour. The bulbs (edible flakes) contain 7.5% sugar on dry weight basis and a fair amount of carotene which is Vitamin-A. Many down the line products from jackfruit are contemplated. Apart from better utilisation of perishable fruit this would also result in considerable value addition.

2.0 PRODUCTS

2.1 Applications

Many products could be made from ripe jackfruit like nectar, jam, pickle, chips and canning. Jackfruit is grown in only certain parts of India and hence its popularity is limited to the growing regions only. Meghalaya, especially Garo region of the state, grows substantial quantities of this fruit and reportedly there are not much processing units in the state.

2.2 Availability of know-how, Quality Standards and Compliances

CFTRI, Mysore, has successfully developed the technical know-how. Compliance with PFA Act and FPO is mandatory.

3.0 MARKET POTENTIAL

3.1 Demand and Supply:

Jackfruit is sweet in taste and also contains Vitamin-A. Like any other fruit, it is perishable in nature. It is grown in very limited parts of India and hence is not much popular in other

parts. It is heavy and bulky fruit and hence transportation is not very easy and is costly as well. Therefore, its down the stream products with longer shelf-life can be easily transported and shall also have value-addition. Products like canned pieces, nectar, jam, pickle and chips are recommended.

3.2 Marketing Strategy

These products have market round the year and are popular in Meghalaya and other North-Eastern states. Products shall have to be sold with the help of retailers at many locations like cities/towns, bus-stands, railway stations, school/college canteens, picnic spots etc. There is a distinct possibility of marketing these products in other States of India as well but for a smaller project like this, it is not recommended.

4.0 MANUFACTURING PROCESS

Jackfruit is heavy and bulky and actual recovery of bulbs or edible portion varies from 20% to 25%. After cutting the fruit in several pieces, the bulbs are removed manually. As the fruit contains highly sticky latex, small quantity of vegetable oil is applied on hands and then seeds are removed from bulbs. In case of canned jackfruit, these bulbs are canned with a small quantity of citric acid as the pH value of this fruit is very high. While making nectar, the bulbs are passed through pulping/fruit mill and around 10% hot water is mixed. Nectar is prepared from this pulp. In case of chips, raw or unripe jackfruits are used. After removing bulbs as stated earlier, suitable smaller sizes are cut and they are fried in edible oil. These fried pieces are salted and then packed. In case of pickle also unripe jackfruits are used. After removing bulbs and seeds, small pieces are made and they are mixed with oil, salt and spices before packing. Jam is prepared from the pulp of ripe fruits with additives.

5.0 CAPITAL INPUTS

5.1 Land and Building

Land of around 300 sq.mtrs. with built up area of 120 sq.mtrs. shall be adequate. The main production hall would occupy around 60 sq.mtrs. whereas balance area of around 60 sq.mtrs. can be suitably divided into go down, packing room and factory office. Cost of land could be about Rs. 3,00,000/- whereas that of civil work it could be Rs. 4.20 lacs.

5.2 Plant and Machinery

It is suggested to have annual production capacity of 100 tons. Jackfruits are available for around 7-8 months and hence yearly working is assumed to be 250 days with 2 shifts per day.

To install this production capacity, following machinery shall be required.

Item	Qty.	Price (Rs)
100 Ltrs. capacity SS make steam jacketed kettle Straight feeding exhaust box with 2 HP motor,	1	24,000
Starter and gear box	1	26,400
Sterilisation tanks	2	6,000
Semi-automatic can Sealer	1	42,000
Can body reformer with electric motor and starter	1	18,000
Can body flagger with electric motor and starter	1	10,800
Fruit Mill with 2 HP motor with blades and sieves suitable for jackfruit	1	22,800
PP Cap sealing machine	1	8,400
Plastic bag sealing machines	2	1,800
Frying pans	2	5,400
Storage containers of food grade plastic of 50 kgs. capacity for pickle	100	24,000
Storage containers of food grade plastic of 30 kgs. capacity for pulp	100	18,000
SS knives, utensils etc.	--	6,000
Testing Equipments	-	12,000
Weighing Scales	--	7,200
200 Kgs. Capacity Mini-boiler	1	60,000
	Total	**2,92,800**

5.3 Miscellaneous Assets

Other items like office furniture, working tables with aluminium tops in the factory, exhaust fans, storage racks and bins etc. are likely to cost Rs. 40,000/-.

5.4 Utilities

Total power requirement shall be 15 HP and water requirement for production process, potable and sanitation purposes shall be around 1500 ltrs every day. Furnace oil or coke or wood will be required for boiler. Annual expenses on utilities at 100% activity level would be Rs. 88,000/-.

5.5 Raw Material

Jackfruit is grown in large quantities in the state of Assam and the total annual production is estimated to be in the vicinity of 1,75,000 tonnes. As against this, the annual requirement of the unit even at 100% capacity utilisation will not be more than 500 tonnes. Actual recovery of bulbs or edible portion is in the range of 20% to 25%. Hence, to be on safer side and to present a realistic picture, recovery or yield is considered to be 20%. However, transportation of jackfruit is expensive and hence the factory should be located in the jackfruit growing area. Other items like sugar, edible oil, salt, citric acid, spices etc. are required in very small quantity and their availability would not be a problem. Packing materials like plastic/glass bottles, tins, caps, labels, printed polythene bags etc. shall be required and since the total quantities shall not be much, it is necessary to make proper supply arrangements.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Workers	2	2,070	4,140
Semi-skilled Workers	2	1,552.5	3,105
Unskilled Workers	4	1,150	4,600
Salesman	1	2,300	2,300
		Total	**14,145**

8.0 DETAILS OF THE PROPOSED PROJECT

8.1 Land and Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Land	300	3,00,000
Building	120	4,20,000
	Total	**7,20,000**

8.2 Plant and Machinery

As elaborated in detail earlier, the total cost under this head comes to Rs. 2.92 lacs.

8.3 Miscellaneous Assets

A provision of Rs. 40,000/- is adequate to install other support assets as explained earlier.

8.4 Cost of the Project and Means of Financing

(Rs. In lacs)

Item	Amount
Land and Building	7.20
Plant and Machinery	2.92
Miscellaneous Assets	0.44
P&P Expenses	0.49
Contingencies @ 10% on Land and Building and Plant & Machinery	1.01
Working Capital Margin	0.94
Total	**13.00**
Means of Finance	
Promoters' Contribution	3.90
Term Loan from Bank/FI	9.10
Total	**13.00**
Debt Equity Ratio	2.24 : 1
Promoters' Contribution	31%

9.0 PROFITABILITY CALCULATIONS

9.1 Production Capacity and Build-up

The rated production capacity of the plant shall be 100 tonnes per year but capacity utilisation in the first year is restricted to 60% whereas second year onwards, it is assumed to be 75%.

9.2 Sales Revenue at 100%

(Rs. In lacs)

Product	Qty. (Tonnes)	Selling Price (Rs/Ton)	Sales
Canned Jackfruit	25	36,000	9.00
Jackfruit Jam	25	36,000	9.00
Jackfruit Nectar	20	31,200	6.24
Jackfruit Pickle	20	32,200	6.44
Jackfruit Chips	10	57,500	5.75
		Total	**36.43**

9.3 Raw Materials Required at 100%

(Rs. In lacs)

Product	Qty. (Tons)	Price/ Ton (Rs)	Value
Jackfruit (Ripe)	350	1,380	4.83
Jackfruit (Unripe)	150	1,150	1.72
Sugar			2.88
Citric acid, pectin, colours, essence etc.	--	--	0.50
Salt, Vinegar, spices	--	--	0.40
Packing Materials Plastic/Glass bottles & Caps.	--	--	1.50
Aluminium Cans	--	--	3.25
Labels, polythene bags, new/used cartons, etc.	--	--	1.25
		Total	**16.33**

10.0 KEY ELEMENTS

- Factory should be located in the jackfruit growing area
- Compliance with PFA Act and FPO is mandatory.

(2)
PROJECT PROFILE
OF
LIME PROCESSING

1.0 INTRODUCTION

Lime has several uses and products made from it have varied applications. Lime processing utilizes each and every portion of lime fruits for high value products, which have a very high market demand. Pectin is used in fruit jams. Lime Oil has many uses in cosmetics and pharmaceutical industries. Citric acid has also many applications as food preservative in many food preparations and food processing industries are large consumers. Clarified lime juice is used as health-drink and is mixed in many food preparations. Lime is cultivated in almost all parts of country and the Meghalaya and other North-East States are not an exception. The note envisages Meghalaya as the preferred location.

2.0 PRODUCTS

As explained earlier, lime is a very versatile product and is used not only in several household preparations but also has many industrial applications in cosmetics, pharmaceutical and food processing industries. This note primarily deals with production of pectin and citric acid.

3.0 MARKET POTENTIAL

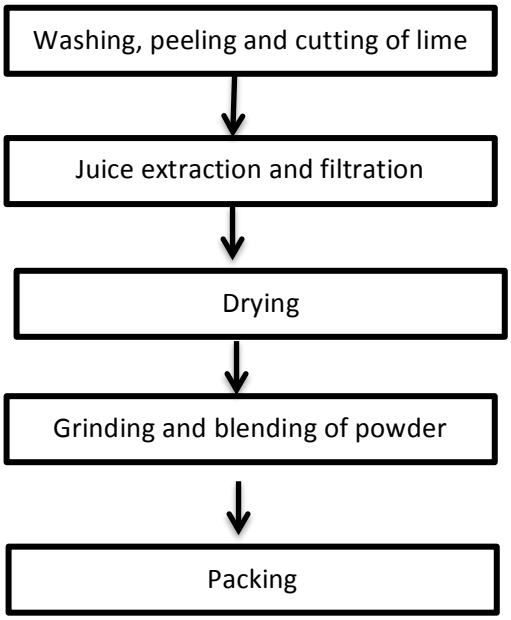
Human beings have been using lime since many centuries but initially its applications were limited. With the advent of technology, many downstream products are being manufactured with domestic as well as industrial applications. Products like pectin, citric acid, lime oil, lime juice etc. are in vogue. There is a growing market in Meghalaya for all these products round the year. The all-important quality of lime is its preservation property. With thrust on industrialisation after independence, industrial applications of lime have got tremendous boost. Pectin and citric acid are two such products, which have witnessed continuous demand during last few decades. There are some established units

producing these items but in view of growing demand, there are good prospects for new units as well. Quality, pricing and consistency in supply shall be the critical success determinants.

4.0 MANUFACTURING PROCESS

The manufacturing process is fairly established. Fresh and matured lime fruits are thoroughly washed and peeled before cutting them. Subsequently, juice is extracted from them and seeds are separated. This juice is then kept for about 4 to 6 hours in precipitation tanks and then taken to tray drier for drying. The drying time is about 8 hours. On drying, the powder is ground and blended with certain solvents and chemicals and finally packed. As regards citric acid, juice is filtered and precipitated in tanks. It is then dried in dryer to form crystals. These crystals are pulverised and packed. On an average, the yield is around 90%.

The Process Flow Chars is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

The total built-up area requirement shall be around 600 sq.mtrs. and hence a plot of 1000 sq.mtrs. is suggested. The built-up area would include main factory shed, solvent storage shed and storage and packing facilities. 5000 ltrs. capacity overhead water tank is

required. Land may cost Rs.10 lacs whereas the construction cost is estimated to be Rs.21.00 lacs.

5.2 Plant and Machinery

It is proposed to install plant and machinery for total production of 10,000 tons of lime pectin and citric acid considering 300 working days per year with two shift working.

To install the above mentioned production capacity of lime products per year, following machinery are required costing Rs.71.50 lacs.

(Rs. In lacs)

Particulars	Amount
Fruit Washing Machine	2.40
Peeling Machines Nos.2	5.10
Basket Centrifuge Nos.3	1.80
Hydraulic Press Nos.6	13.20
Juice extractor Nos.2	6.60
Precipitation Tanks (1000 Lts) (Nos.4)	6.60
Teflon Coated Centrifuge (Citric Acid)	1.80
Evaporated Pan/Kettle	1.50
Filters Nos.2	1.80
Tray Drier (45 trays)	4.20
Multimill for grinding	2.40
Vaccum filtration Plant	6.00
Solvent Recovery Plant	2.40
Lime Cutter (Automatic)	2.40
Steam distillation unit	1.80
Vaccum Evaporator (citric Acid)	3.00
Ribbon blender, filter press etc.	4.80
Electrification D.G.Set 200 KVA	18.00
Total	**85.80 ~86.00**

5.3 Miscellaneous Assets

Some other assets like furniture and fixtures, storage facilities, working tables, etc. would cost Rs. 5.50 lacs

5.4 Utilities

The total power requirement shall be 100 HP whereas water required every day shall be 5000 lts. Proper arrangements need to be made.

5.5 Raw Material

The main raw material required is lemon. The state of Meghalaya cultivates more than 10,000 tonnes of lime fruits every year. Thus availability should not be a problem but the unit can enter into a contract with lime fruit cultivators to ensure timely and adequate quantity. Other materials required shall be alcohol, solvent, chemicals, etc. shall be available locally. Packing material like polythene bags, HDPE barrels, labels etc. shall be needed for which prior proper arrangements are advisable.

6.0 MANPOWER REQUIREMENTS

Particulars	No	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Machine Operators	2	4,025	8,050
Skilled Workers	4	2,875	11,500
Semi-skilled Workers	4	2012.5	8,050
Helpers	6	1437.5	8,625
Clerk	1	2,875	2,875
Salesman	1	2,875	2,875
		Total	**41,975**

7.0 DETAILS OF THE PROPOSED PROJECT

7.1 Land and Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.Lacs)
Land	1,000	10.00
Building	600	21.00
	Total	**31.00**

7.2 Plant and Machinery

The total cost of machinery is estimated to be Rs. 85.80 lacs, as explained earlier.

7.3 Miscellaneous Assets

The provision for miscellaneous assets of Rs. 5.50 lacs shall be adequate as explained earlier.

7.4 Cost of the Project and Means of Financing

(Rs. In lacs)

Items	Amount
Land and Buildings	31.00
Plant and Machinery	86.00
Miscellaneous Assets	5.50
Preliminary and Pre-operative Expenses	8.80
Contingencies @ 10% on land and building and machinery	11.70
Working Capital Margin	9.36
Total	**152.36**
Means of Finance	
Promoter's Contribution	45.71
Bank Loan/ Financial Institutions	106.65
Total	**152.36**
Debt Equity Ratio	2.37 : 1
Promoters Contribution	30%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build-up

The installed production capacity of the proposed unit would be 10,000 MTA lime products in 300 working days of 16 hours. The capacity utilization of 60% and 75% is envisaged during the first two years.

8.2 Sales Revenue at 100% Capacity

(Rs. In lacs)

Product	Qty. in Tonnes	Selling Price Per Ton/Rs.	Value
Pectin	3500	9600	336.00
Citric Acid	4500	3600	162.00
Lime Juice	1000	9600	96.00
		Total	**594.00**

8.3 Raw and Packing Materials Required at 100%

(Rs. In lacs)

Product	Quantity (Tonnes)	Rate per Ton	Value
Lemon Fruits	10,000	3,450	345.00
Alcohol, Solvents, Chemicals	--	--	24.00
Cost of Packing Materials @ 500/Ton	--	--	45.00
		Total	**414.00**

9.00 KEY ELEMENTS

- Unit can enter into a contract with lime fruit cultivators to ensure timely and adequate quantity
- Marinating correct process parameters to retain freshness

(3)

PROJECT PROFILE
OF
MUSHROOM PROCESSING

1.0 INTRODUCTION

Mushrooms are gradually becoming popular as they are rich in minerals and vitamins and very low on fat and sugar. Fresh mushrooms have very limited life and hence they need to be consumed within few hours. But processing and canning increases their shelf life to few months. Mushrooms are used to make soups, pickles; vegetables etc. and they are also used as additives in many food preparations. As a matter of fact, they are considered as a vegetarian delicacy all over the world and their consumption is increasing in India as well. Meghalaya also has distinct demand for these products. Their household use is picking up but they are consumed in large quantities in star hotels and restaurants. Hence, firm tie up with some of them is advisable.

2.0 PRODUCTS

2.1 Applications

Mushroom is an exotic and nutritious source of vegetarian food and is also easy to digest. It is considered as a suitable substitute for meat and eggs. There are many varieties of mushroom and most of them are edible. It is a universal product and Meghalaya has been considered as a likely location.

2.2 Availability of know-how and Compliances

CFTRI, Mysore, has successfully developed the technical know-how. Compliance under the PFA Act is mandatory.

3.0 MARKET POTENTIAL

Mushrooms are very popular in most of the developed countries and they are becoming popular in many developing countries like India. Applications and market for mushrooms is growing rapidly in India because of their nice aroma, nutritious values, subtle flavour and special taste. Many exotic food preparations like soup, vegetables, pickles etc. are made from them. They are also used for garnishing, to prepare many varieties of gravy and for stuffing several food preparations. But they are still considered as up-market product and their consumption is limited to urban and semi urban areas. Fresh mushrooms have very limited shelf life but processed and canned mushrooms have fairly long shelf life and can be sold even at far off places. Star hotels, exclusive restaurants, certain caterers are the bulk consumers and a firm tie up for regular supply with some of them is advisable. The product can be sold even through the departmental stores, super markets etc.

4.0 MANUFACTURING PROCESS

Fresh mushrooms are washed in cold water and then blanched in boiling water for around 3-4 minutes. Then they are dehydrated in drier and packed. It is advisable to pre-treat fresh mushrooms in a solution containing brine to prevent discolouration. Packing is very critical as formation of moisture contaminates mushrooms very quickly. Hence plain cans and brine of 2% salt and 0.2% citric acid are used for packing. The cans are exhausted at 19° C for 7-8 minutes, sealed and processed under pressure for around half an hour. Yield of final product depends up on the quality of dryer, manufacturing process employed, moisture content in fresh mushrooms and moisture required in the final product. Hence average yield is taken at 25%.

5.0 CAPITAL INPUTS

5.1 Land and Building

Land admeasuring around 200 sq.mtrs. with built up area of about 100 sq.mtrs. is adequate. Land may cost Rs. 2,00,000/- whereas cost of construction could be Rs. 3.50 lacs.

5.2 Machinery

A thorough market survey would help to arrive at the proposed processing capacity. Assuming daily capacity of 1 ton or annual capacity of 300 tonnes considering 300 working days would require following machines.

Item	Qty.	Price (Rs)
Baby Boiler	1	72,000
Tray-type Dehydrator	1	86,000
Can Seamer	1	24,000
Can Reforming with Rubber Rollers, Hand Flanger etc.	1	30,000
Exhaust Box with electric Motor	1	18,000
Steam Jacketted Kettle	1	36,000
Weighing Scales	2	6,000
Laboratory Equipments	--	30,000
	Total	**3,02,000**

5.3 Miscellaneous Assets

Some other support assets like furniture and fixtures, storage racks, packing tables, SS utensils etc. shall be required for which a provision of Rs. 44,000/- is made.

5.4 Utilities

The power requirement will be 30 HP and everyday water requirement shall be 1000 lts.

5.5 Raw Material

The most crucial raw material will be good quality fresh mushrooms. Shelf life of fresh mushrooms is few hours and hence the location has to be very close to the cultivation area. Prior arrangements with some cultivators for regular supply must be made. Future planning may include mushroom cultivation for captive consumption. Salt and citric acid will be required in small quantities. Cans of appropriate size, labels and corrugated boxes would form packing material.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Workers	2	2,587.5	5,175
Helpers	4	1,437.5	5,750
Salesman	1	2,875	2,875
		Total	**13,800**

7.0 DETAILS OF THE PROPOSED PROJECT

7.1 Land and Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Land	200	2,00,000
Building	100	3,50,000
	Total	**5,50,000**

7.2 Plant and Machinery

Machinery worth Rs. 5.50 lacs shall be required as discussed earlier.

7.3 Miscellaneous Assets

A provision of Rs. 44, 000/- is adequate under this head as explained earlier.

7.4 Cost of the Project and Means of Financing

(Rs. In lacs)

Item	Amount
Land and Building	5.50
Machinery	3.02
Miscellaneous Assets	0.44
P&P Expenses	0.66
Contingencies @ 10% on Land and Building & Plant & Machinery	0.85
Working Capital Margin	1.68
Total	**12.15**
Means of Finance	
Promoters' Contribution	3.64
Term Loan from Bank/FI	8.51
Total	**12.15**
Debt Equity Ratio	2.33 : 1
Promoters' Contribution	30%

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build-up

As against the rated processing capacity of 300 tonnes, capacity utilisation in the first year is assumed to be 60% and thereafter 75%.

8.2 Sales Revenue at 100%

(Rs. In lacs)

Product	Qty. (Tonnes)	Price/Ton (Rs.)	Sales Value
Tinned Mushrooms	50	2,30,000	115.00

8.3 Raw and Packing Materials Required at 100%

(Rs. In lacs)

Product	Qty. (Tonnes)	Price/Ton (Rs.)	Value
Fresh Mushrooms	100	2,00,000	200.00
Salt, Citric Acid, etc.	--	--	0.60
Cans	1,76,500	Rs.3/Tin	6.08
Cartons, Labels etc.	--	--	2.50
		Total	**209.18**

9.0 KEY ELEMENTS

1) Packing is very critical as formation of moisture contaminates mushrooms very quickly.
2) Good quality fresh mushrooms.
3) Shelf life of fresh mushrooms is few hours and hence the location has to be very close to the cultivation area.

(4)

PROJECT PROFILE
OF
POTATO PROCESSING

1.0 INTRODUCTION

Potato is possibly the most popular food item in the Indian diet. Potato is a very rich source of starch. It also contains phosphorus, calcium, iron and some vitamins. Apart from use of fresh potatoes for the purpose of making vegetables and gravy, they are dehydrated in the forms of slices, sticks, cubes or powder to impart better shelf life. Yet another popular use is to make wafers or chips.

2.0 PRODUCTS

2.1 Applications

Potatoes are grown and used in the Indian culinary since centuries with many end-uses as explained above. However, this note deals with making of potato chips as this product is very popular all over the country and can be manufactured even on small scale. Potatoes are grown in many parts of the country and thus this is not a location-specific product. This note considers Meghalaya as the proposed location.

2.2 Quality Standards and Compliances

Provisions under the PFA Act must be adhered to. BIS has specified quality standards vide IS 2397:1988.

3.0 MARKET POTENTIAL

3.1 Demand and supply

Rapid urbanisation and improving standards of living have seen manifold increase in the demand of potato chips. Easy availability, convenient packaging, affordable prices and nutritious values are some other reasons for their popularity even in far flung rural areas. There exists consumer as well as bulk markets.

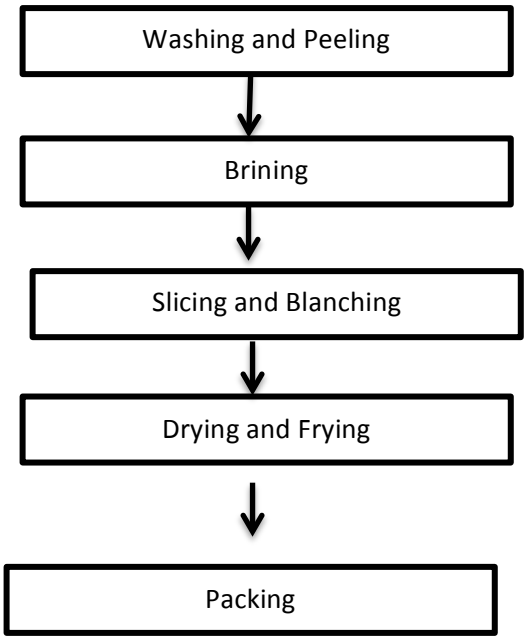
3.2 Marketing Strategy

There are some international as well as national brands but majority of the market is penetrated by local manufacturers due to competitive pricing, easy availability at many outlets and very efficient and timely supply as well as replacement. With proper strategy and network, it is possible to penetrate the market.

4.0 MANUFACTURING PROCESS

Fully grown and ripe potatoes are thoroughly washed before peeling them. Then these potatoes are trimmed and put in brine water for 30-35 minutes to prevent browning. They are afterwards cut in the required sizes on slicing machine. These slices are blanched in boiling water and are then placed on drying trays which are then put in the drying machine. Temperature of dryer is maintained in the range of 140° to 150° F. After drying, they are fried in edible oil to make them crisp and brown and then they are packed in polythene bags. The chips could be salty or spicy or some other flavours which are locally popular can also be tried.

The Process Flow Chart is as follows:



5.0 CAPITAL INPUTS

5.1 Land and Building

Land of 200 sq.mtrs. with built up area of 100 sq.mtrs. would be adequate. Equipments would occupy around 60 sq.mtrs and rest of the area can be utilised for storage, a small office etc. The land would cost Rs.2,00,000/- whereas cost of building is estimated to be Rs. 3.50 lacs.

5.2 Plant and Machinery

Keeping in mind, the potential market and economic viability, it is suggested to install production capacity of 40 tons of potato chips per year with 2 shift working and 300 working days each year. To achieve this capacity, following equipments are required:

Item	Qty. (Nos)	Price (Rs)
Slicer made of SS with attachments and electric motor	1	36,000
Electrically-operated dryer with trolleys and 96 trays	1	96,000
Coal-fired Furnace	1	18,000
Motorised Potato Peeling Machine	1	18,000
Automatic Sealing Machine	1	12,000
Cutting and peeling knives, aluminium utensils, weighing scale, etc.	--	36,000
	Total	**2,16,000**

5.3 Miscellaneous Assets

A provision of Rs. 38,500/- would take care of furniture, storage facilities, tables, exhaust fans, etc.

5.4 Utilities

Power requirement shall be 10 HP whereas per day water requirement will be 2,000 ltrs. Coal requirement for furnace shall be about 1 ton every month.

5.5 Raw Material

The all-important raw material is good quality potatoes. Potatoes have high water content. Hence total process loss shall be almost 30%. The state of Meghalaya produces around 70,000 tonnes of potatoes every year. Thus, procurement of the required quantity shall not be a bottleneck. Other materials like salt, spices, preservatives etc. are easily available.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Workers	2	2,070	4,140
Semi-skilled Workers	2	1,725	3,450
Helpers	2	1,380	2,760
Salesmen	1	1,725	1,725
		Total	**12,075**

7.0 DETAILS OF THE PROPOSED PROJECT

7.1 Land and Building

As explained earlier, land of about 200 sq.mtrs. with built up area of 100 sq.mtrs. would suffice. Land may cost about Rs.2,00,000/- whereas the cost of construction would be in the vicinity of Rs.3,50,000/-.

7.2 Plant and Machinery

The total cost under this head is estimated to be Rs. 2.16 lacs as explained earlier.

7.3 Miscellaneous Assets

As estimated expenditure under this head is Rs. 38,500/-.

7.4 Cost of the Project and Means of Financing

(Rs. In lacs)

Item	Amount
Land and Building	5.50
Plant and Machinery	2.16
Miscellaneous Assets	0.38
P&P Expenses	0.38
Contingencies @ 10% on Building and Plant & Machinery	0.76
Working Capital Margin	0.58
Total	**9.77**
Means of Finance	
Promoters' Contribution	2.92
Loan from Bank/FI	6.84
Total	**9.76**
Debt Equity Ratio	2.48 : 1
Promoters' Contribution	29%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build-up

The rated production capacity of the plant would be 40 tonnes per year and it is anticipated that it shall be operated at 60% and 75% respectively during first two years.

8.2 Sales Revenue at 100%

For a new entrant, it becomes very difficult to capture the market. Hence, it is assumed that the net selling price will be Rs. 66/- per kg. or Rs.66,000/- per ton. Thus, the total sales realisation will be Rs.26.40 lacs.

8.3 Raw Materials Required at 100%

(Rs. In lacs)

Product	Qty. (Tonnes)	Rate per Ton (Rs)	Value
Potatoes	58	9,200	5.33
Salt, Spices, Preservatives, Edible Oil etc.	--	--	1.00
Hard coke	12	1,150	0.13
Packing Materials	--	--	1.50
		Total	**7.96**

9.0 KEY ELEMENTS

1) Provisions under the PFA Act must be adhered to. BIS has specified quality standards vide IS 2397:1988.
2) Good quality fresh potatoes
3) Market linkages

(5)

PROJECT PROFILE
ON
RICE MILL

1.0 INTRODUCTION

Paddy or rice grain consists of husk and brown rice. Brown rice, in turn, contains bran which is in the form of an outer layer and the edible portion. Rice milling is removal or separation of husk (dehusking) and bran to obtain the edible portion for consumption. The process has to be accomplished with care to prevent excessive breakage of the kernel and improve recovery of paddy or rice. The extent of recovery during milling depends on many factors like variety of paddy, degree of milling required, the quality of equipments used, the operators, etc. Rice mill is a common activity and can be started in many parts of the country and this note considers **Meghalaya** as the prospective location.

2.0 PRODUCTS

2.1 Applications

What comes out during milling operation are husk, milled rice or edible portion, bran and the broken rice. Depending upon the type of rice mill, the by-products come out in mixed or separated form. Milling is usually done when paddy is dry (around 14% moisture content). Wet soft grains are powered and very dry brittle grains would break.

2.2 Availability of technical know-how and compliances

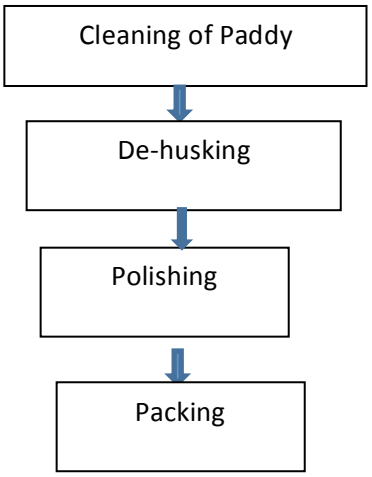
CFTRI, Mysore, has successfully developed the technical know-how. Compliance under the PFA Act is compulsory.

3.0 MARKET POTENTIAL

Rice is considered to be staple food diet in most parts of India including the North-east States. Paddy is the most important agricultural commodity in Meghalaya and the total area under cultivation is estimated to be around 2.25 lac hectares with annual production of close to 5 lac tons. Apart from every household, there are many bulk buyers like hospitals, caterers, restaurants, hostels, etc. With proper efforts, it is possible to enter into a long term contract with big traders or contractors.

4.0 MANUFACTURING PROCESS

The process is very well standardised. First of all, paddy is cleaned to remove unwanted matters like mud, stones, chaff etc. This cleaned lot is then fed to dehusker where with the help of rubber roller, husk is separated. The brown rice is then taken to huller where polishing is done by mild friction created within the polishing chamber. The resulting polished rice and bran are separated and collected. Recovery of edible rice is around 80%. By-products constitute about 15% whereas balance 5% is waste and process loss. The process flow chart is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

It is suggested to buy an open plot of around 200 sq.mtrs. which would cost around Rs. 2.00 lac on which the built up area would be 80 sq.mtrs. costing around Rs.2.80 lacs.

5.2 Plant and Machinery

The minimum viable capacity has to be processing of 600 tons per year on two shift working and around 250 working days. To install this production capacity, following equipments need to be installed.

Item	Qty. (Nos)	Rate (Rs.Lacs)
Dehusking Machine with rubber rollers of 10 inches	1	1.80
Polishing Machine	1	1.44
Huller	1	0.60
Others	--	0.48
	Total	**4.32**

5.3 Utilities

Total power requirement will be 30 HP whereas water requirements are not much. Annual expenditure under this head at 100% activity level could be Rs.60,000/-.

5.4 Raw Material

Paddy is the only raw material required. The input-output ratio is 100.80 and to that extent, the quantum of paddy would go up. Thus even at 100% utilisation, the requirement will not be more than 750 tons per year. Looking to the total production of paddy in Meghalaya, supplies should not be a problem. But it is advisable to have long term supply arrangements in place.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Worker	2	4600	9200
Semi-skilled Workers	2	2300	4600
Helpers	4	1350	5400
		Total	**19,200**

7.00 COST OF THE PROJECT AND MEANS OF FINANCING

Item	(Rs.Lacs)
Land and Building	4.80
Plant and Machinery	4.32
Miscellaneous Assets	0.55
P&P Expenses	0.66
Contingencies @ 10% on Building and Plant & Machinery	0.91
Working Capital Margin	2.40
Total	**13.64**
Means of Finance	
Promoters' Contribution	4.09
Loan from Bank/FI	9.55
Total	**13.64**
Debt Equity Ratio	2.33 : 1
Promoters' Contribution	30%

8.00 FINANCIAL RETURNS

8.1 Production Capacity and Build up

The processing capacity is taken at 200 tons per year on two shift working. As explained earlier, processing of 200 tons would, on an average, yield 160 tons of edible paddy or rice with 80% recovery. Hence, capacity utilisation in the first year is taken at 60% whereas second year onwards, it is assumed to be 70%.

8.2 Sales Revenue at 100%

Product	Qty. (Tons)	Selling Price/Ton	Sales Value (Rs.lacs)
Rice	160	34,500	55.20
Husk/Bran, etc.	20	3,450	0.69
		Total	**55.89** **OR 56.00**

Selling price of rice would vary depending upon the quality of inputs. Product-mix may vary and hence an average selling price of Rs.16,800/- per ton is assumed. Similarly, price of husk and bran is also taken at Rs.4,025/- which would fluctuate in line with quality of inputs, processing techniques etc. as explained earlier.

9.00 KEY ELEMENTS

1) Recovery of edible rice at around 80% or more
2) Linkages for bulk market

(6)

PROJECT PROFILE OF SPICE GRINDING

1.0 INTRODUCTION

Spices are an integral part of the Indian food, including in Meghalaya with consumption not only in households, restaurants and other eateries but also in food processing industry such as pickles, sauces, instant curry powders, ready-to-eat food preparations and so on. Hence, a spice grinding unit is recommended.

2.0 PRODUCTS

2.1 Applications

Many spices are used all over the country and the unit can go on adding new products. But this note considers only some of them like turmeric powder, black pepper powder and chilli powder. This activity can be started in several states of the country where as this note considers Meghalaya as the preferred location.

2.2 Availability of Technical know-how and Quality Standards

CFTRI, Mysore, has successfully developed the technical know-how. It is advisable to obtain AGMARK certification.

3.0 MARKET POTENTIAL

Spices are essential ingredients imparting taste and flavour to food preparations. Besides their everyday use in households, they are used in large quantities in restaurants, hostels, catering services, food processing industries, road-side eateries and so on. Apart from the state of Meghalaya, nearby North-Eastern states can also be tapped. Spices are fast moving consumable items and have large potential. There has to be a wide-spread network of dealers or retailers backed up by advertisements in local media. A provision of 20% of sales income is made to take care of these expenses.

4.0 MANUFACTURING PROCESS

The manufacturing process is very well established and does not involve technicalities. Unground spices are cleaned manually to remove impurities like mud and stones and are then washed in water. After drying them in sunlight, they are graded and ground with the help of grinding machine to convert them in powder form. Disintegrator is used in case of solid material like turmeric to obtain uniform mesh size. Spices in powder form are then weighed as per the contemplated packing quantities and packed in printed polythene bags and then these bags are sealed on automatic sealing machine.

5.0 CAPITAL INPUTS

5.1 Land and Building

Land measuring around 150 sq.mtrs. is adequate with built-up area of about 75 sq.mtrs. consisting of main production area, packing room and godown. The total cost is expected to be Rs. 4.12 lacs.

5.2 Plant and Machinery

The suggested production capacity is 60 tonnes per year for which following equipments costing about Rs. 2.64 lacs are envisaged.

Item	Qty.
Disintegrator	1
Spice Grinding Machine	1
Plastic Sealing Machine	1
Weighing Scales	2

5.3 Miscellaneous Assets

A provision of Rs. 22,000/- is made to take care of other support items like picking tables, storage racks, etc.

5.4 Utilities

Power requirement would be 10 HP whereas water is required in small quantity to clean ungrounded spices and for potable purposes.

5.5 Raw Material

The major raw materials shall be unground turmeric, black pepper and chillies. Considering 5% process loss, the total quantity required would be 63 tonnes per year for the proposed capacity of 60 tonnes. Spices are widely grown in Meghalaya and Assam. It is estimated that the total production of turmeric in Meghalaya is around 8,500 tonnes and that of chillies, it is 2000 tonnes annually. Hence, availability of raw materials round the year will not be a problem. The project would require printed polythene bags of different sizes which would be available locally.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Supervisor	1	2,875	2,875
Skilled Workers	2	2,070	4,140
Semi-skilled Workers	2	1,725	3,450
		Total	**10,465**

7.0 DETAILS OF THE PROPOSED PROJECT

7.1 Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.
Land	150	1,50,000
Building	75	2,62,500
	Total	**4,12,500**

7.2 Plant and Machinery

The total cost would be Rs. 2.64 lacs as explained earlier.

7.3 Miscellaneous Assets

A provision of Rs. 22,000 is adequate as detailed earlier.

7.4 Cost of the Project and Means of Financing

(Rs. In lacs)

Item	Amount
Land and Building	4.12
Plant and Machinery	2.64
Miscellaneous Assets	0.22
P&P Expenses	0.33
Contingencies @ 10% on Land & Building and Plant & Machinery	0.67
Working Capital Margin	1.50
Total	**9.48**
Means of Finance	
Promoters' Contribution	2.84
Loan from Bank/FI	6.64
Total	**9.48**
Debt Equity Ratio	2.47 : 1
Promoters' Contribution	29%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build-up

The installed production capacity would be 60 tonnes per year considering 300 working days and 2 shift working per day. Capacity utilisation is considered to be 60% in the first year and 75% in the second year.

8.2 Sales Revenue at 100%

(Rs. In lacs)

Product	Qty. (Tonnes)	Selling Price (Rs/Ton)	Sales
Turmeric Powder	35	66,000	23.10
Dhania Powder	10	1,84,000	18.40
Chillie Powder	15	86,250	12.93
		Total	**54.43**

8.3 Raw Materials Required at 100%

(Rs. In lacs)

Product	Qty. (Tonnes)	Rate (Rs.) per Ton	Value
Turmeric	36.75	120000	44.10
Dhania	10.50	1,60,000	16.80
Chillie	15.75	11,500	1.81
		Total	**62.71**

9.0 KEY ELEMENTS

1) Availability and freshness of spices which are the key raw materials
2) Correct drying procedure in sunlight to retain properties

(7)

PROJECT PROFILE
ON
BEE KEEPING & HONEY PROCESSING

1.0 INTRODUCTION

Honey is a consumable product and it is also used extensively in making Ayurvedic medicines. Natural honey is always in demand round the year. Natural honey is obtained from honey bees and hence bee-keeping is a profitable activity. But it has to be undertaken at a place where there is a very limited movement of people or vehicles. This activity has the potential to provide regular income especially in rural areas. Therefore, the government is also encouraging this activity and Khadi and Village Industries Board extends many incentives as well as marketing support.

2.0 PRODUCT

2.1 Applications

Three species of honey bees are existing in India viz. Apis Dorsta, Apis Flora and Apis Indica. These species are reared for honey-combs. Pure or natural honey is extracted from bees. This honey is in great demand round the year especially for Ayurvedic medicinal purposes. Many health conscious people consume it regularly. It is also used in making certain health food preparations.

Meghalaya State Government under the aegis of Integrated Basin Development & Livelihood Promotion Programme (IBDLP) of Meghalaya Institute of Entrepreneurship (MIE) under the Directorate of Commerce & Industries has special promotional schemes to encourage beehive cultivation and Honey processing.

2.2 Quality Standards

Quality standard specified by the BIS for honey is 4941:1968

3.0 MARKET POTENTIAL

Honey has substantial medicinal properties and is used in India since long. Procurement of natural or pure honey is becoming difficult due to urbanisation and de-forestation. Simultaneously, its demand is steadily increasing as Ayurvedic medicines are becoming more and more popular. To facilitate rearing of honey bees to obtain natural honey, many government agencies are providing assistance/incentives. There are many locations in the Meghalaya state where this activity can be taken up.

Meghalaya State Government, under the scheme mentioned above, also facilitates marketing of Honey both within and outside Meghalaya.

4.0 MANUFACTURING PROCESS

As explained earlier, bee-keeping activity should ideally located where there are minimum movements of human-beings with very little noise. Forest area is, therefore, suited with many flowering plants naturally grown. Movable wooden frames with boxes are placed at such locations and these boxes are spread with honey spice to attract more and more honey-bees. These bees leave fresh honey sucked from flowers in the cells of honey-comb provided in the boxes to eat bee feed. When these cells are full of honey, they are hermetically sealed by capping with wax and then honey is extracted from these cells. Freshly extracted honey is warm and easy to bottle. It is essential to undertake proper training of extraction and bottling.

Meghalaya State Government, under the scheme mentioned above also provides orientation and training for Bee breeding and honey processing

5.0 CAPITAL INPUTS

5.1 Land and Building

Land has to be in the secluded and forest or hilly area. A plot of around 150-200 sq.mtrs. is sufficient. To limit the capital cost, the promoter can start this activity on own land or it can be obtained on long term lease. There is no need to have a sturdy building but a shed of around 20-25 sq.mtrs with asbestos sheet roofing is sufficient. It may cost Rs.87,500/-.

5.2 Machinery

This is not a manufacturing activity as such and no machines are required. There is nothing like production capacity as well. Small wooden frames with boxes are needed. Their sizes are also standardised. Around 30 such sets would cost Rs.54, 000/-. Honey extractors would cost Rs. 6,000/- each with filtration facilities. Two such extractors would mean investment of Rs. 12,000/-. Manually operated bottle capping machine would be available at about Rs. 2,400/-. Thus, total investment for support facilities would be Rs. 68,400/-.

5.3 Utilities

There is no need to have industrial connection for power and even domestic supply is sufficient. In case of non-availability of power connection (due to peculiar location), the operations can be carried out during day-time.

5.4 Raw Material

There is no raw material as such. Honey feed of about Rs.1, 03, 500/- will be required every year for 30 boxes. Quantum of bottles would depend upon the type of packing. In case of bulk packing, bottles could be of bigger sizes. However, average cost per kg. is taken at Rs.4.6/-.

6.0 MANPOWER REQUIREMENT

Particulars	Qty.	1st Year	2nd Year
Skilled Workers	2	2,587.5	5,175
Helpers	2	1,150	2,300

7.0 PROJECTED PROFITABILITY

7.1 Sales Income

There are no standards in terms of capacity or capacity utilisation and hence production and therefore sale cannot be quantified. But as per the established norms, each box is able to

collect around 20 kgs. of honey every month or about 240 kgs. every year. Since it is suggested to have 30 boxes, the annual collection could be 7,200 kgs. Even after considering very conservative selling price of Rs. 108/- per kg; the annual realisation would be Rs. 7,77,600/-.

7.2 Maintenance Cost

There are not much maintenance costs as there are no machines or a large building with utilities. Hence, monthly provision of Rs. 2,750/- is adequate.

7.3 Interest

It is assumed that as against capital expenditure of Rs.72,000/-, loan of Rs.50,000/- would be availed @ 12% per annum which will be repaid in 2½ years including a moratorium period of 6 months.

7.4 Depreciation

Bulk of the investment will be on wooden frames with boxes. Hence, flat provision of Rs. 5,000/- is made every year.

7.5 Capacity and Build-up

There is no measurable capacity as such but as explained earlier, on an average, each box collects around 240 kgs. of honey every year. The quantity depends on exact location, flowering varieties, climatic conditions etc. Hence, as against this industry average, actual collection is expected to be 60% and 70% during first two years.

8.0 COST OF THE PROJECT AND MEANS OF FINANCING

Item	(Rs.Lacs)
Land	Own
Building	0.87
Equipments	0.68
Total	**1.55**
Means of Finance	
Promoters' Contribution	0.46
Loan from Bank/FI	1.09
Total	**1.55**
Debt Equity Ratio	2.27 : 1
Promoters' Contribution	31%

Financial assistance in the form of grant is available from the Government of Meghalaya towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

9.0 PROJECTED PROFITABILITY

(Rs.lacs)

No.	Particulars	1st Year	2nd Year
A	Sales Realisation	3.89	4.54
B	**Cost of Production**		
	Raw and Packing Materials	1.08	1.10
	Utilities	0.18	0.24
	Salaries	0.78	0.90
	Repairs & Maintenance	0.30	0.42
	Selling and Administrative Expenses	0.42	0.54
C	**Total**	**2.76**	**3.20**
	Profit Before Interest & Depreciation	1.13	1.34
	Interest on Term Loan	0.06	0.04
	Depreciation	0.05	0.05
	Profit Before Tax	1.02	1.25
	Income-tax @ 20%	--	0.05
	Profit After Tax	1.02	1.20
	Cash Accruals	1.07	1.25
	Repayment of Term Loan	0.12	0.24

10.0 KEY ELEMENTS

1) Meghalaya State Government provides orientation and training for Bee breeding and honey processing
2) Quality standard specified by the BIS for honey is 4941:1968
3) Value addition

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PROJECT PROFILE
ON
CAKES AND PASTRIES

1.0 INTRODUCTION

Bakery products have become very popular throughout the country. Breads and biscuits are the most common products but other items like cakes, pastries, cream-rolls, cookies etc. are also not lagging behind. These items are consumed by people of all age groups across the board. Nature of these products is such that the consumers prefer fresh items. Shelf life of cakes & pastries is limited and thus local manufacturers enjoy distinct advantage. In spite of continuous increase in the consumption of these items during the last few years, the per capita consumption is still very low compared to the advanced countries. There is, thus, good scope for these items in Meghalaya.

2.0 PRODUCT

2.1 Applications

Cakes & pastries are sweet wheat preparations usually made with beaten eggs and yeast as they act as aerating agents. These are, thus, concentrated foods of high caloric value with rich in fat. There are many varieties and flavours of cakes & pastries.

2.2 Quality standards and Compliances

Compliance with PFA Act is mandatory. BIS has specified quality standards for both the products.

3.0 MARKET POTENTIAL

3.1 Demand and Supply

Changing lifestyles and increase in standard of living have changed the eating habits of people with liking for instant or ready-to-eat food items. This trend has spread throughout the country in all age groups and now even people from the rural areas have also joined this band-wagon. Bakery products fall under the same category and apart from bread and biscuits; items like cakes, pastries, cream-rolls, cookies etc. have become very popular. Fresh items are always preferred by the consumers.

Meghalaya in general and Shillong and other such centres in particular with its fairly cosmopolitan population have more potential for such range of products including premium varieties.

3.2 Marketing Strategy

Couple of national brands tried to enter this market in a big way few years back but their products are still finding it difficult to capture the market as the consumer preference is always for freshly prepared cakes or pastries. There are always some well-known bakers at each centre and the real competition would be from them. Hence, it is advisable to have a retail outlet along with bakery apart from sale through other outlets.

3.0 MANUFACTURING PROCESS

It is standardised and simple for all products. To make cakes, wheat flour and baking powder along with cream, sugar and ghee is mixed thoroughly till it becomes fluffy. Then mixture of beaten eggs is added to it along with caramel colour and chopped fruits before the mixture is poured into cake pans and baked for around 30-40 minutes. Pastries are made in different shapes like square, rectangular etc. from thick cake sheets. Butter cream, jam etc. is placed between layers of cake. The layered cake is then chilled and cut with sharp knife in the required shape and size. Sides of the pieces are iced with butter cream or fudge and topped with finely ground cake crumbs or pieces of fruits or chocolate strips and decorated with proper design, colour and garnish.

There are no standard flavours or varieties and preference of local population has to be kept in mind. There is a very good scope to introduce new varieties palatable to local tastes.

4.0 CAPITAL INPUTS

4.1 Land and Building

Land of about 200 sq.mtrs. with built up area of 125 sq.mtrs would accommodate bakery as well as a retail outlet. Land may cost Rs. 2,00,000/- whereas the construction cost would be Rs. 4.37 lacs including necessary product storage and display facilities for retailing.

4.2 Machinery

It is assumed that the cake making capacity would be 100 tonnes with 1 shift working and 330-340 working days. This would need the following machines.

Item	Qty.	Price (Rs)
Flour Sifter	1	18,000
Egg Beater	1	9,600
Cake Mixer	1	30,000
Sugar Pulveriser-10 Kgs Capacity	1	14,400
Electrically – operated Oven with 48 Trays	1	96,000
Baking Pans and Moulds	--	24,000
SS utensils, plastic tubs, mixing vessels, weighing scales etc.	--	48,000
	Total	**2,40,000**

4.3 Utilities

Total power requirement shall be 20 HP whereas water requirement would be about 1200 ltrs. every day.

4.4 Raw Material

The all-important raw material will be wheat, flour, sugar, eggs and ghee for which proper arrangements should be made. Other items like milk powder, yeast, salt assorted fruits,

baking powder, caramel colour, vanilla, butter cream, etc. shall be required in small quantity. Butter paper and cardboard cartons will be required for packing.

5.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Workers	2	2,875	5,750
Semi-skilled Workers	4	1,437.5	5,750
Salesman	2	2,875	5,750
		Total	**17,250**

6.0 COST OF THE PROJECT AND MEANS OF FINANCING

Item	(Rs. in Lacs)
Land and Building	6.37
Machinery	2.40
Miscellaneous Assets	0.82
P&P Expenses	0.55
Contingencies @ 10% on Land & Building and Machinery	0.87
Working Capital Margin	0.96
Total	**11.97**
Means of Finance	
Promoters' Contribution	3.60
Term Loan from Bank/FI	8.37
Total	**11.97**
Debt Equity Ratio	2.20:1
Promoters' Contribution	31%

7.00 PROFITABILITY CALCULATIONS

7.1 Production Capacity and Build up

As against annual rated capacity of 100 tonnes, actual utilisation would be 60% in the first year and 75% thereafter.

7.2 Sales Revenue at 100%

Assuming average selling price of Rs. 54,000/- per ton, annual sales at 100% would be Rs. 54.00 lacs

8.00 KEY ELEMENTS

1) Competition from established and well-known brands
2) Niche marketing
3) Market linkages with offer of customised products
4) Required permissions from Food Control Authorities

(9)

PROJECT PROFILE
ON
COLD STORAGE

1.0 INTRODUCTION

Cold storages are meant to preserve the perishable commodities of food items for a longer period with retention of the original colour, flavour and taste. However, each commodity or item has certain life and they cannot be stored even in a cold storage for indefinite period. Storage beyond certain period may not be economical as well since payment of rent of cold storage increases the cost of the item. Hence, cold storages are used for high value items or during the period when prices crash down due to bumper crop or for such items which are grown during the season but there is a demand round the year or for the products like meat, fish or milk products which are quickly perishable. Meghalaya with its range of products in these categories require cold storages.

2.0 PRODUCT

Cold storages are being used for preservation of many food products since long. Their location has to be strategic and they should have easy access. Cold storages have demand all over the country. This note primarily looks into the prospects in Meghalaya. The state grows many varieties of fruits and vegetables. Consumption of meat, fish, chicken etc. is also on the higher side. Hence, a cold storage seems to have good scope.

3.0 MARKET POTENTIAL

3.1 Demand and Supply

Location is a very critical aspect for the success of cold storage. It should be in the close proximity of growing area as well as market and at the same time should be easily accessible for heavy vehicles round the year. Uninterrupted power supply is yet another pre-requisite. It could be on the border of Assam.

3.2 Marketing Strategy

Many fruits and vegetables like pineapples, apples, plums, oranges, potatoes, phis cot, cauliflowers etc. are grown in Meghalaya. Likewise, consumption of meat, chicken, fish etc. is also substantial. Hence, there is a good scope for a cold storage. A possibility of storing some milk products may also be explored. Different items are stored during different times requiring different temperatures. Hence, there is a need to divide total storage space in different temperature zones depending upon local needs.

4.0 MANUFACTURING PROCESS

A proper market analysis would throw light on storage needs and accordingly tentative plan for the whole year has to be drawn. Compressors suitable for using ammonia have to be selected as ammonia is cheap, easily available and is of high latent heat of evaporation but it is highly toxic in nature if mixed with oil containing high carbon percentage. Hence, handling and maintenance has to be very careful. Rooms with different temperature requirements must be properly insulated and protected from moisture. On outside walls, one coating of foam with vapour proof material is advisable. Temperature and humidity is maintained according to the items stored. Use of skewed door arrangements, proper insulation and required circulation of cool air inside the storage area would make operations economical and improve profitability.

5.0 CAPITAL INPUTS

5.1 Land and Building

For storage capacity of 100 tons, the size of the cold storage has to be around 150 sq.mtrs. whereas non-storage area of 100 sq.mtrs. for office, utility room and guard room is sufficient. Hence, a plot of land of around 400 sq.mtrs. shall be required which would cost around Rs.4.00 lacs. Construction cost of cold storage is taken at Rs.3,500/- per sq.mtr. due to special insulation and coating and other needs whereas that of office, guard room and utility room, it is considered to be Rs.3,500/- per sq.mtr. Thus, the total cost of construction works out to Rs.8.75 lacs.

5.2 Plant and Machinery

There are turnkey suppliers of cold storage plants. They undertake supply, erection as well as complete electrification of the plant. The main requirements are reciprocating compressors suitable for ammonia, induction motor, blowers, overhead perforated water pipes with tanks, electric pump, piping, ducting and insulation and standby generator etc. Total cost of 100 tons capacity would be around Rs.14.40 lacs including erection and commissioning charges.

5.3 Utilities

Power requirement shall be 60 HP whereas water requirement shall be 700-750 ltrs. per day. Ammonia gas cylinders shall also be required. Diesel for generator set shall also be required.

5.4 Raw Materials

Since this is not a manufacturing activity, there will not be any need of raw materials.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Technicians	2	2,875	5,750
Godown-keepers	2	2,300	4,600
Helpers	2	1,437.5	2,875
Security Guard	2	1,725	3,450
		Total	**16,675**

7.0 COST OF THE PROJECT & MEANS OF FINANCING

Item	(Rs.Lacs)
Land and Building	12.75
Machinery	14.40
Miscellaneous Assets	0.20
P&P Expenses	0.82
Contingencies @ 10% on Land and Building & Plant & Machinery	2.71
Working Capital Margin	0.60
Total	**31.48**
Means of Finance	
Promoters' Contribution	9.44
Term Loan from Bank/FI	22.04
Total	**13.48**
Debt Equity Ratio	2.23 : 1
Promoters' Contribution	31%

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity & Build up

Cold storage would work for all the year and hence its capacity would be to store 1200 tons during the year. Actual utilisation is expected to be 60% and 75% during first 2 years respectively and third year onwards it is restricted to 80%.

8.2 Sales Revenue at 100%

Rent of cold storage in Meghalaya would vary according to the temperature to be maintained, duration of storage, temperature differences according to season, volume or size of items to be stored and so on. Hence, an average rent of Rs. 2100/- per ton is assumed and accordingly annual rent works out to Rs. 25.20 lacs.

9.0 KEY ELEMENTS

1) Selecting a good location which is close both to growing area as well as the market area is a key aspect.
2) There is a need to arrange and maintain adequate infrastructure such as availability of uninterrupted power, vehicles for transportation etc.
3) Various parameters such as room temperature, humidity conditions etc. and careful handling of ammonia/equipment should be met properly.

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PROJECT PROFILE ON MUSTARD OIL

1.0 INTRODUCTION

Consumption of edible oil is substantial throughout the country. All Indian households use it every day. Various types of edible oils are available in the country eg. groundnut, cottonseed, rapeseed, sunflower, mustard etc. Edible oils are made from respective oil seeds by extraction process and there are some national as well as regional brands. The North East region of the country including Meghalaya consumes mustard oil in large quantity.

2.0 PRODUCT

2.1 Applications

Edible oil is an integral part of the Indian palate since long. India is perhaps the largest producer and consumer of different types of edible oils. Preference for the type of edible oil differs from state to state, e.g. People from Western India prefer groundnut or cottonseed oil whereas North-East States like mustard oil. Hence this note is confined to mustard oil.

2.2 Compliances and quality standards

Compliance with PFA Act is necessary whereas registration under AGMARK is advisable. BIS has specified quality standards vide 546 IS 546:1975.

3.0 MARKET POTENTIAL

Due to peculiar food habits and preparation methods, Indians use large quantities of edible oils every day. With growing population, demand is increasing every year and the country is importing semi-processed edible oils since long. As per our preliminary survey, Mustard oil is preferred as a cooking medium by the people of Meghalaya. As per one estimate, there are some oil mills in Meghalaya but even then mustard seeds are sold to other states

and mustard oil produced in other states is sold in Meghalaya in ample quantity. Thus, good quality mustard oil produced locally can be sold in the market.

4.0 MANUFACTURING PROCESS

The process of manufacture is well established and conventional. To begin with, dry mustard seeds are fed to Table Ghani or oil extractor wherein about 90% of the oil is extracted. Further processing in expeller results in additional extraction of oil. Liquid oil and solid portion is then separated in filters. The solid portion known as oil cake is sold as cattle feed. Edible oil is packed either in tins, jars or food grade plastic pouches. The oil contents depend upon quality of seeds but the average recovery of oil from seeds is in the range of 30% to 34%.

5.0 CAPITAL INPUTS

5.1 Land and Building

Around 200 sq.m of plot with built up area of 100 sq.m is sufficient. The cost of land could be Rs. 2.00 lac whereas the built up area would cost Rs.3.50 lacs. The construction cost is taken on a lower side as this will be a typical Ghani and will not require RCC slab on the entire building. Thus, total cost of land and building shall be in the region of Rs.5.50 lacs.

5.2 Machinery

Keeping in mind, the demand potential and economic viability of the project, it is advisable to install machinery to produce 72 tons of mustard oil every year at 100%capacity. In this industry, plant is operated for about 210-220 days per year due to seasonal availability of oil seeds. To have this rated production capacity, following machines are needed.

Item	Qty.	Price (Rs)
Table Ghani	1	72,000
Oil Expellers	2	84,000
Filter Press	1	66,000
Other Support Equipments, electric motor and testing facilities	--	48,000
	Total	**2,70,000**

5.3 Utilities

Power requirement would be 25 HP and water shall be required for potable and sanitation purposes. The annual cost under this head at 100% activity level is estimated to be Rs.66,000/-.

5.4 Raw Material

The all-important raw material shall be mustard seeds. The average recovery of oil is considered to be 30%. Hence to produce 72 tons of edible oil per year at 100% capacity utilisation, mustard seeds to the extent of 240 tons shall be required. In view of production of mustard seeds in excess of 75,000 tons every year, no difficulty is envisaged in procurement. Other materials in small quantities like additives and purifying agents shall be available easily. Packing materials like tins, jars or plastic pouches shall be required for which prior arrangement is advisable.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Worker	2	2,070	4,140
Semi-skilled Workers	2	1,725	3,450
Helpers	2	1,380	2,760
Salesman	1	2,875	2,875
		Total	**13,225**

7.0 COST OF THE PROJECT AND MEANS OF FINANCING

Item	(Rs.Lacs
Land and Building	5.50
Plant and Machinery	2.70
Miscellaneous Assets	0.55
P&P Expenses	0.44
Contingencies @ 10% on Land & Building and Plant and Machinery	0.82
Working Capital Margin	1.32
Total	**11.33**
Means of Finance	
Promoters' Contribution	3.39
Loan from Bank/FI	7.94
Total	**11.33**
Debt Equity Ratio	1.96 : 1
Promoters' Contribution	34%

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build up

Production capacity at 100% would be 72 tons of mustard oil considering working of about 220-230 days every year. It is assumed that the plant would be operated at 60% and 75% respectively during first 2 years.

8.2 Sales Revenue at 100%

Product	Qty. (Tons)	Selling Price (Rs)	Sales (Rs.lacs)
Mustard Oil	72	78,000	56.16
De-oiled Cake	80	6,000	4.80
		Total	**60.96**

9.0 KEY ELEMENTS

1) Regulatory compliances and quality standards should be met.
2) Good packaging material should be available.

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PROJECT PROFILE
ON
MUSTARD POWDER

1.0 INTRODUCTION

Mustard seeds are an important oilseeds and India is one of the leading producers of these oilseeds. Bulk of the production goes for oil extraction but de-husked mustard is a popular table enricher on account of its flavour and pungency. A pasty product with mustard, salt and vinegar is very popular abroad whereas mustard powder is used as condiment in many food preparations like pickles and chutney, meat, salad dressings etc. North Eastern States of Meghalaya and Assam produce substantial quantity of mustard seeds. Therefore, one of the North Eastern states is a preferred location.

2.0 PRODUCT

2.1 Applications

Mustard powder is used in many vegetarian and non-vegetarian food preparations and also in pickles and chutney, in salad dressings etc. Its flavour and pungency finds many uses as table mustard.

2.2 Availability of technology compliances

CFTRI, Mysore has standardised the technology for producing mustard powder of good quality. Compliance under PFA Act is mandatory.

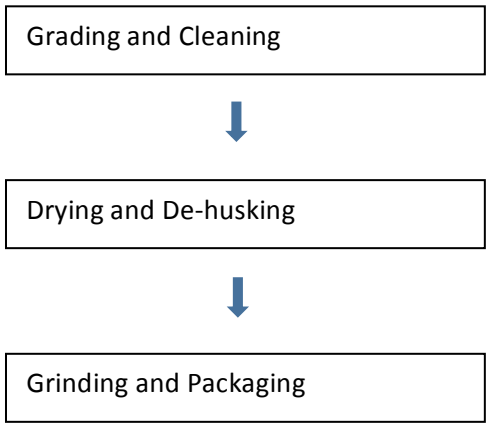
3.0 MARKET POTENTIAL

Mustard edible oil is one of the popular oils and mustard powder has also become very popular as condiment due to its peculiar flavour and pungency. Mustard powder is used in many vegetarian and non-vegetarian food and snack preparations and as condiment in

pickles, meat and salad dressings. As a matter of fact, Indian black mustard is known for its flavour and pungency and has very good export potential. There are very few large scale producers of this product and market is dominated by the small units. Adequate publicity, proper placement and well-spread marketing network are critical aspects.

4.0 MANUFACTURING PROCESS

Process developed by the CFTRI, Mysore ensures optimal product recovery of right quality. To start with graded and cleaned seeds are dried and subjected to splitting and de husking. Then the mixture of husk and splits are screened and separated. Mustard splits are ground to the desired fineness to obtain powder in a triple roller mill and finally powder is packed. Recovery is around 75%. The Process Flow chart is as follows:



5.0 CAPITAL INPUTS

5.1Land and Building

Land of around 300 sq.mtrs. with constructed area of 150 sq.mtrs. would be sufficient. Main production area would need around 75 sq.mtrs. whereas balance area would be utilised for raw material and finished goods storage and packing. Land would cost around Rs.3,00, 000 whereas cost of construction would be around Rs. 5.25 lacs.

5.2 Machinery

Annual rated capacity of 225 tons considering 2 shift working per day and 300 working days each year would require following machines.

Item	Qty.	Price (Rs)
Triple Roller Mill	1	1,80,000
Grader	1	48,000
Classifier	1	36,000
Plate Mill	1	1,02,000
Mini Boiler-100 kgs Capacity	1	90,000
Steam Jacketed Kettle – 60 Ltrs.	1	24,000
Seed Cleaner	1	30,000
Weighing scale, sealing machine, aluminium utensils, HDPE barrels, etc.	--	90,000
	Total	**6,00,000**

5.3 Utilities

Total power requirement shall be 30 HP whereas per day water requirement would be 2500 ltrs. Coal shall be required for boiler.

5.4 Raw and Packing Materials

The only raw material would be good quality mustard seeds. Since the annual requirement even at 100% would not be more than 300 tons every year, no difficulty is envisaged in procurement. Printed polythene bags of good quality, corrugated boxes, labels, BOPP tape would be the packing materials.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Workers	2	2,875	5,750
Semi-skilled Workers	4	2012.5	8,050
Helpers	6	1,437.5	8,625
Salesman	1	2,875	2,875
		Total	**25,300**

7.00 COST OF THE PROJECT & MEANS OF FINANCING

Item	(Rs.Lacs)
Land and Building	8.25
Machinery	6.00
Miscellaneous Assets	0.88
P&P Expenses	1.37
Contingencies @ 10% on Land and Building and Plant & Machinery	1.42
Working Capital Margin	2.88
Total	**20.80**
Means of Finance	
Promoters' Contribution	6.24
Term Loan from Bank/FI	14.56
Total	**20.80**
Debt Equity Ratio	2.34 : 1
Promoters' Contribution	30%

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity & Build up

As against the rated annual capacity of 225 tons, actual utilisation in the first year is taken at 60% and thereafter it is limited to 75%.

8.2 Sales Revenue at 100%

Assuming selling price of Rs. 54,000/- per ton, annual sales at 100% would be Rs. 121.50 lacs.

9.0 KEY ELEMENTS

1) Regulatory compliances should be met.
2) Availability of good quality mustard seeds should be ensured.
3) Good publicity and developing effective market strategy is a key to success.

(12)

PROJECT PROFILE
ON
PASSION FRUIT SQUASH

1.0 INTRODUCTION

Fruits are an important source of energy for human-beings. But their availability is seasonal and they are perishable. Hence, they need to be processed and preserved which also results in value-addition. India produces many varieties of citrus fruits and Passion fruit is a speciality of the North East region including Meghalaya. The state of Meghalaya has good production base of this fruit and this note considers Meghalaya as the preferred location. Hence Passion fruit squash making activity on a small scale is suggested.

2.0 PRODUCTS

2.1 Applications

Squashes are sweetened juice of fruits containing some pulp. They contain at least 25% (by volume) of fruit juice and are consumed after dilution. Squashes also contain added flavours. Since preservatives are added in adequate quantities, the shelf life of squashes is fairly longer.

2.2 Availability of technology and compliances

CFTRI, Mysore, has successfully developed the technical know-how. Compliance with PFA Act and FPO is Mandatory

3.0 MARKET POTENTIAL

3.1 Demand and Supply

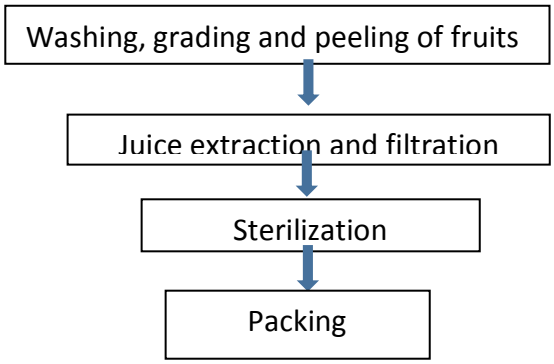
Fruits are popular amongst all age groups but their availability is limited during season only which lasts for a period of 3-4 months for most of the fruits. Hence, squashes are becoming popular. They are sold at many places like provision and departmental stores, cold drink centres, restaurants, etc. and since they have a longer shelf life, consumers prefer them. Yet another feature is very easy to make. Only required quantity of water is to be added.

3.2 Marketing Strategy

With changing life styles and increase in disposable incomes, this product is gaining more and more popularity. Squashes of some conventional and selected fruits are available in the market but it is recommended to introduce squash of Passion fruit as its taste is palatable to local population. This would also provide an edge over other competitors.

4.0 MANUFACTURING PROCESS

The process is not very complicated. Good quality ripe fruits are washed, peeled and cleaned. Then juice is extracted from fruits and it is filtered to remove seeds and fibres. Then juice is processed and sterilised and then syrup of sugar, preservatives etc. are added and this mixture is stirred till uniform solution is formed. In the final process, bottling and packing is done. The process flow chart is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

There is no need to buy a piece of land and then undertake construction. Instead, a readymade shed of around 125 sq.mtrs. shall be adequate. Apart from production hall, some space for storage and packing will be required. The total cost could be Rs.4.37 lacs. Regulations under FPO must be adhered to.

5.2 Plant and Machinery

It is desirable to install production capacity of 80 tonnes per year considering around 300 days and 2 shifts per day.

Installation of following equipments would be necessary to do this.

Item	Qty.	Price (Rs)
Fruit Washing Tanks	3	18,000
Juice Extractors-50 Ltrs.	2	1,02,000
Steam Jacketed Kettles-30Ltrs Capacity	2	48,000
Stirrer	1	18,000
Baby Boiler-30 kgs capacity	1	72,000
Bottle Washing and Filling Machine	1	90,000
Testing Equipments	--	36,000
	Total	**3,84,000**

5.3 Utilities

Total power requirement shall be 30 HP whereas water requirement will be 1500 litres per day. Annual expenditure under this head at 100% capacity utilisation would be around Rs. 99,000/-.

5.4 Raw Material

The all-important raw materials will be fresh and ripe Passion fruits. The state of Meghalaya grows large quantity of Passion fruits and with adequate prior arrangements; supplies can be ensured. Other materials required will be sugar, additives, preservatives etc. Packing materials like food grade plastic/glass bottles, polythene bags and corrugated boxes shall also be required.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Workers	2	2,070	4,140
Semi-skilled Workers	2	1,725	3,450
Helpers	2	1,380	2,760
Salesman	1	2,300	2,300
		Total	**12,650**

7.0 COST OF THE PROJECT AND MEANS OF FINANCING

Item	(Rs.Lacs)
Building	4.37
Plant and Machinery	3.84
Miscellaneous Assets	0.55
P&P Expenses	0.44
Contingencies @ 10% on Building and Plant & Machinery	0.82
Working Capital Margin	0.92
Total	**10.94**
Means of Finance	
Promoters' Contribution	3.20
Term Loan from Bank/FI	7.74
Total	**10.94**
Debt Equity Ratio	2.36 : 1
Promoters' Contribution	30%

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build up

Installed capacity of the plant shall be 80 tons per year. Capacity utilisation in the first year is assumed to be 60% and second year onwards 75%.

8.2 Sales Revenue at 100%

Considering sales realisation of Rs.48,000/- per ton or Rs.40/kg the annual sales at 100would be Rs.38.40 lacs.

9.0 KEY ELEMENTS

1) Regulatory compliances should be met.
2) Availability of good quality, fresh and ripe passion fruit should be ensured.
3) Good market strategy is a key to success.

(13)

PROJECT PROFILE
ON
CANNED PINEAPPLE PRODUCTS

1.0 INTRODUCTION

Pineapple is one of the popular fruits and is liked by majority of the people irrespective of their age group. East Khasi region in Meghalaya has very good base of pineapple cultivation. As is the case with most of the fruits and vegetables, their availability is limited during the year. Many techniques have been developed to make available seasonal fruits as well as vegetables even during off-season. Canned pineapple slices and juice are such products. Pineapple is consumed as dessert, in fruit salads, while making cakes and pastries etc. Thus there are large number of consumers who would like to consume pineapple slices or juice.

2.0 PRODUCT

2.1 Applications

Pineapple products include pineapple slices and juice. In order to increase the shelf life and to make pineapple juice and slices even during off-season, canning is the most popular method. The project can be undertaken in pineapple growing states and the preferred locations are the North Eastern states.

2.2 Availability of technology and compliances

CFTRI, Mysore, have developed the process know-how. Certification under FPO and compliances with provisions therein is compulsory.

3.0 MARKET POTENTIAL

3.1 Demand and supply

Fruits provide important proteins as well as minerals and they are being consumed by human beings since many centuries. The major drawback of any agriculture/horticulture produce is seasonal availability. Several techniques to preserve these perishable commodities have been developed during last few decades and canning is one such

reliable method. Pineapples are very popular amongst consumers and their availability in the form of juice or slices round the year would enable the consumers to enjoy them whenever they want. Pineapples are grown in large quantity in North Eastern States including in Meghalaya as mentioned above. If fresh pineapples are processed and canned, then there is large market scattered throughout the country. There are also very good export prospects if international quality is achieved and sustained. Countries like the USA, UK, Germany, Holland etc. are regular importers of pineapple products.

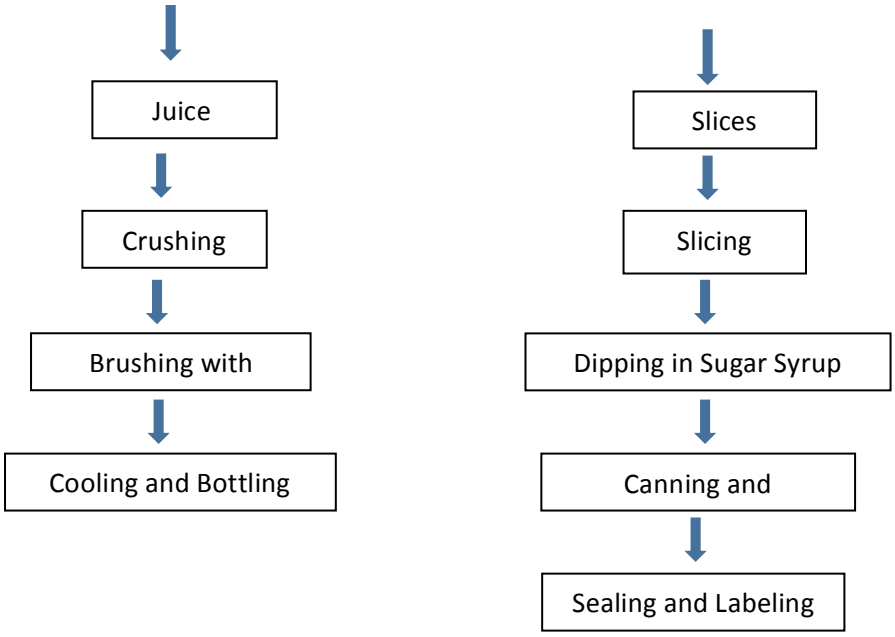
3.2 Marketing Strategy

The first generation entrepreneur has to be extra careful while approaching export markets and ideally he should have excellent contacts either with foreign buyers or some intermediaries. India itself is a very large and growing market and once quality of the product is established in the domestic market, efforts can be made to branch out to foreign markets.

4.0 MANUFACTURING PROCESS

The manufacturing process of the proposed pineapple products viz. slices and Juice involves many steps and different sub-processes. Ripe and matured pineapples are washed, graded and peeled. Then they are crushed in the crusher to obtain juice. In case of slices, after peeling, uniform slices are made on the slicer. Juice is then taken to vessels and boiled and certain preservatives are added. It is finally taken to storage tanks and packed in bottles on vacuum filling machine. In case of slices, they are dipped in sugar syrup for about 3 to 4 hours. Then the slices are taken to lacquered cans and cans are sterilized. While canning, sugar syrup is added. Cans are cooled quickly and after sealing and labeling, they are stored. The average yield is around 80%. The Process Flow Chart is as under.

WASHING, GRADING AND PEELING OF PINEAPPLES



5.0 CAPITAL INPUTS

5.1 Land and Buildings

A plot of land of around 1000 sq.mtrs.with built up area of 600 sq.mtrs. would be required. The main factory operations would need around 350 sq.mtrs. of built up area whereas balance area will be needed for washing, storage of raw materials and finished goods and packing. 5000 ltrs. Capacity water storage tank shall also be needed. Cost of land is estimated Rs.10.00 lacs whereas that of civil work Rs.12.25 lacs.

5.2 Plant and Machinery

The requirement of plant and machinery for the project could be divided into four lines as under.

1. Washing and preparation
2. Slice line
3. Juice line
4. Packing line

It is suggested to have installed processing capacity of 3600 tons per year considering double shift working and 300 working days. This would require following machinery.

No.	Particulars	Quantity/ No
1	**Washing and preparation**	
	(a) Channel system for unloading and washing pineapples	1 No.
	(b) Discharge Elevator	1 No
	(c) Graders	1 No.
	(d) Belt Conveyors	2 No.
	(e) Chutes	2 No
	(f) Pineapple peelers	2 No.
2	**Slice Line**	
	(a) Single Knife Slicers	1 No
	(b) Corner and can loaders	2 No
	(c) Resizer/Corners	2 No.
	(d) Can loaders	1 No.
	(e) Pieces cutting machines	2 No.
	(f) Vaccum filling machine	1 No
	(g) Seaming machine	1 No
	(h) Tunnel Pasteurizer/Cooler	1 No
	(i) Can Dryer	1 No
	(j) Belt Conveyors	2 No.
3	**Juice Line**	
	(a) Disintegrator	1 No.
	(b) Vessels	2 No
	(c) Pumps	2 No
	(d) Packing press	1 No
	(e) Tubular preheater	1 No
	(f) Separator	1 No
	(g) Vacuum filling machine	1 No
	(h) Seaming Machine	1 No
	(i) Tunnel pasteurizer/cooler	1 No
	(j) Can Dryer	1 No
	(k) Belt Conveyors	1 No
4.	**Syrup Line**	1 No.
5	**Labelling and packing Line**	1 No
6	**Miscellaneous equipment and accessories**	--

The total cost of machinery and equipments would be Rs.120.00 Lacs.

6.0 MANPOWER REQUIREMENT

No.	Particulars	No	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
1.	Plant Operators	4	4,025	16,100
2.	Skilled Workers	6	2,875	17,250
3.	Semi-skilled Workers	4	2012.5	8,050
4.	Helpers	6	1,437.5	8,625
5.	Clerk	1	2,875	2,875
6.	Salesman	2	2,875	5,750
			Total	**58,650**

7.0 COST OF THE PROJECT AND MEANS OF FINANCING

Items	Amount Rs. Lacs
Land and Buildings	22.25
Plant and Machinery	120.00
Miscellaneous Assets	8.80
Preliminary and Pre-operative Expenses	10.01
Contingencies @ 10% on land and building and machinery	14.22
Working Capital Margin	14.25
Total	**189.78**
Means of Finance	
Promoter's Contribution	56.94
Bank Loan/ Financial Institutions	132.84
Total	**189.78**
Debt Equity Ratio	1.74 : 1
Promoters Contribution	37%

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build up

The Installed production capacity of canned Pineapple products would be 3600 MTA. The capacity utilisation of 60% and 70% is planned during the first two years.

8.2 Sales Revenue at 100%

Product	Qty (Tons)	Selling Price Per Ton.	Value Rs.Lacs
Pineapple Slices	1350	13,200	178.20
Pineapple Juice	1550	16,800	260.40
		Total	**438.60**

9.0 KEY ELEMENTS

1. Certifications and regulatory compliances should be met.
2. Availability of good quality, fresh and ripe pineapple should be ensured.
3. Export market is good. Efforts should be made to develop a product which meets international standards.

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PROJECT PROFILE
ON
PINEAPPLE AND ORANGE PRODUCTS

1.0 INTRODUCTION

Fruits are an important source of energy. However their availability is seasonal and they are perishable. Hence, they need to be processed and preserved which also results in value-addition. India is endowed with many varieties of citrus fruits. Amongst these fruits, pineapples and oranges are very popular and number of processed products like juices, squashes, jams, marmalades etc. can be made from them. Khasi district in Meghalaya has good base of Pineapple & Orange cultivation.

2.0 PRODUCTS

2.1 Applications

Oranges and pineapples are grown in large quantities in many parts of the North-East region including Meghalaya. Fruits are perishable in nature and for their preservation; they need to be processed to make juices, squashes, jams, etc. This product note is confined to making orange juice and squash and pineapple juice.

2.2 Availability of technical know-how and compliances

CFTRI, Mysore, has successfully developed the technical know-how. Provisions under the FPO must be adhered to.

3.0 MARKET POTENTIAL

Fruits are popular amongst all age groups. But fresh fruits are available only during specific season and that too for 2-3 months every year. Hence, downstream products made from fresh fruits have become popular especially in urban and semi-urban areas. But off-late demand from rural areas is also going up. Apart from households, they are sold at many places like restaurants, clubs, railway stations and bus-stops, cold drink houses, picnic or

tourist spots and many such places. With growing disposable incomes and changing lifestyles, such products have witnessed increase in demand.

4.0 MANUFACTURING PROCESS

The important steps involved in making fruit juice and squash are:

a) Washing, cleaning, grading and peeling of fruits.

b) Juice extraction and filtration for removal of seeds and fibres.

c) Juice processing, sterilisation and mixing of preservatives.

d) In case of squashes, juice is mixed with syrup of sugar, citric acid and water and this mixture is stirred till uniform solution is formed.

5.0 CAPITAL INPUTS

5.1 Land and Building

Built up area of about 125 sq.mtrs. shall be adequate. A readymade shed of this size could cost around Rs. 4.37 lacs. About 75 sq.mtrs.would constitute production area whereas balance space can be utilised for packing and storage.

5.2 Plant and Machinery

To ensure financial viability of the project, it is desirable to install production capacity of 120 tons per year considering around 250 working days due to non-availability of fruits during about 3 months. To have this production capacity, following equipment are required.

Item	Qty.	Price (Rs)
Fruit Washing tanks	2	12,000
Juice Extractors	2	1,20,000
Steam Jacketed Kettles (60ltrs. Capa.)	2	48,000
Stirrer	1	24,000
Bottle Washing and Filling Machine	1	90,000
Baby Boiler (100 kgs. Capacity)	1	72,000
Testing Equipments	--	18,000
	Total	3,84,000

5.3 Miscellaneous Assets

The project would require other assets like exhaust fans, stainless steel vessels for storage, furniture, storage racks etc. for which a provision of Rs. 55,000/- is necessary.

5.4 Utilities

Total power requirement shall be 40 HP whereas water requirement per day shall be1500 ltrs. Annual expenditure under this head at 100% capacity utilisation would be around Rs. 99,000/-.

5.5 Raw Material

The all-important raw materials shall be fresh oranges and pineapples. It is estimated that around 80,000 hectares are covered in the North-East region for orange and pineapple cultivation of which Meghalaya accounts for 17,000 hectares with average production of 80,000 tons per year. Oranges are available from November to March and pineapples from August to October and December to February. Even at 100% capacity utilisation, the project would require 55 tons of oranges and 110-115 tons of pineapples due to wastage of almost 90%. Hence availability will not be a bottleneck. Other items like additives, preservatives, sugar etc. shall also be required in small quantities. Packing materials like food grade plastic bottles or glass bottles shall also be required in large quantities for which proper supply arrangements shall have to be made.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Workers	4	2,070	8,280
Semi-skilled Workers	3	1,725	5,175
Salesman	1	1,725	1,725
		Total	**15,180**

7.0 COST OF THE PROJECT AND MEANS OF FINANCING

Item	(Rs.Lacs)
Building	4.37
Plant and Machinery	3.84
Miscellaneous Assets	0.55
P&P Expenses	0.55
Contingencies @ 10% on Building and Plant and Machinery	0.82
Working Capital Margin	1.62
Total	**11.75**
Means of Finance	
Promoters' Contribution	3.52
Term Loan from Bank/FI	8.23
Total	**11.75**
Debt Equity Ratio	2.33 : 1
Promoters' Contribution	30%

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build up

The installed production capacity would be 120 tons per year and the actual capacity utilisation is assumed to be 60% in the first year and 75% in second year.

8.2 Sales Revenue at 100%

Product	Qty. (Tons)	Selling Price (Rs)	Sales (Rs.lacs)
Orange Juice	25	41,400	10.35
Orange Squash	35	48,000	16.80
Pineapple Juice	25	36,000	9.00
Pineapple Squash	35	48,000	16.80
		Total	**52.95**

9.0 KEY ELEMENTS

1) Certifications and Regulatory compliances should be met.
2) Availability of good quality and fresh pineapple and oranges should be ensured.
3) Procurement of good packaging material needs to be done in advance.

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PROJECT PROFILE
ON
BLEACHED AND DEHYDRATED GINGER

1.0 INTRODUCTION

The state of Meghalaya produces substantial quantity of ginger with East-Khasi Hill district producing about 5000 tonnes annually whereas Jaintia Hills district around 2000 tonnes. Bulk of ginger is marketed in raw form or dried form and a small quantity is used for making oil. Dry ginger is prepared from the underground shoots or rhizomes of zingber officinal plant. It is usually prepared by peeling of the outer skin and drying them in sun for about a week. It is also known as unbleached ginger. This is the common practice. But mechanical dehydration increases the production; quality is superior and more hygienic. This is a versatile product and can be produced in many parts of the country but this note considers Meghalaya as the preferred location.

2.0 PRODUCT

2.1 Applications

Ginger is a seasonal product but it is used extensively in many food preparations. Hence dried ginger or ginger powder is used in large quantity during off-season.

2.2 Availability of knowhow, Compliances and quality standards

CFTRI, Mysore, has successfully developed the technological know-how. Compliance under the PFA Act is mandatory. Quality standards are specified in IS 1908:1961.

3.0 MARKET POTENTIAL

3.1 Demand and supply

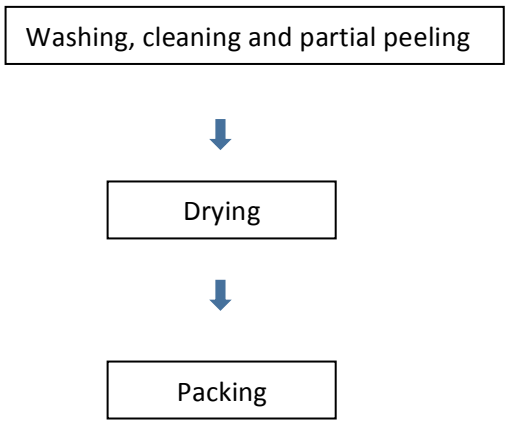
Fresh and dried ginger, ginger oil and ginger powder are used in large quantities in many vegetarian and non-vegetarian food preparations in Indian, Continental and Chinese cuisine. Ginger also has medicinal attributes and is used in many households as well as by pharmaceutical companies. Bit fresh ginger is available only for about 5-6 months and hence the demand for bleached and dehydrated ginger is increasing.

3.2 Marketing Strategy

Manual and sun-drying method is in vogue for dehydration since long, but production is not only limited but quality is also not up to the mark. Hence, mechanically bleached and dehydrated ginger has become very popular. Restaurants, eateries and dhabas, clubs, caterers, food processing industry and pharmaceutical companies are the main consumers. There are very good export markets as well but the contemplated capacity of the project does not warrant this aspect.

4.0 MANUFACTURING PROCESS

Ginger is washed and cleaned in water and then skin of ginger is peeled partially with the help of peeling machine. It is then dried in electrically operated tray drier at a temperature of about $60^{o}C$. Even if ginger is to be used for extraction purposes, this temperature is advisable as oil contents in ginger are not affected till $80^{0}C$. Drying time is 24 hours in cross-flow type drier and 14 hours in through-flow drier. Dried ginger slices are packed in polythene bags and sealed. Average yield after drying is around 25%. CFTRI, Mysore, has developed the technical know-how successfully. The process flow chart is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

Total built-up area requirement is 50 sq.mtrs. and hence it is assumed that a readymade shed shall be bought which would cost Rs. 2.00 lacs. Machines can be accommodated in about 20 sq.mtrs. whereas balance area can be utilised for storage and packing.

5.2 Machinery

Rated processing capacity of 20 tonnes per month is suggested considering 1 shift working and production for only 6 months during the year. This would require following set of equipments:

Item	Qty.	Price (Rs.)
Ginger Peeling Machine	1	50000
Electrically-operated Tray Drier-48 trays	1	90000
Weighing-scales, sealing machine, etc.	--	30000
Washing Tank	1	20000
	Total	**1,90,000**

5.3 Utilities

Power requirement shall be 10 HP whereas water requirement will be 400-500 ltrs. every day.

5.4 Raw Materials

The all important raw material is fresh ginger. Requirement during the season even at 100 % will be 30 tonnes and procurement should not be a problem at all. Bags made from food grade plastic shall be required for inner packing and large size bags for outer packing.

6.0 MANPOWER REQUIREMENTS

Particulars	No.s	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Workers	1	4000	4000
Semi-skilled Worker	1	2000	2000
Helpers	2	1500	3000
Salesman	1	3000	3000
		Total	**12,000**

7.0 COST OF THE PROJECT AND MEANS OF FINANCING

Item	Amount (Rs.in Lacs)
Building	2.00
Machinery	1.90
Miscellaneous Assets	0.40
P&P Expenses	0.60
Contingencies @ 10% on Land and Building and Plant & Machinery	0.40
Working Capital Margin	1.00
Total	**6.30**
Means of Finance	
Promoters' Contribution	2.40
Term Loan from Bank/FI	3.90
Total	**6.30**
Debt Equity Ratio	2.20:1
Promoters' Contribution	38%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity & Build-up

The rated capacity is 20 tonnes per month and the plant would be operated for 6 months. The promoters may use it for some other fruits or vegetables but this note does not account for any such activity. Capacity Utilisation in the first year is taken as 60% and thereafter it is limited to 75%.

8.2 Sales Revenue at 100%

Assuming selling price Rs. 1,00,000/- per ton, sales revenue at 100% for six months will be Rs. 120.00 lacs.

8.3 Financial Return

Estimated return over Investment (RoI) is @15%

9.0 KEY ELEMENTS

1) Ginger to be of fresh and good quality.
2) Export market linkages
3) Certifications and Regulatory compliances should be met.

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PROJECT PROFILE OF SOLAR DRYERS

1.0 INTRODUCTION

The demand for crops, food products, pharmaceuticals, and chemicals is growing exponentially day-by-day with the population explosion. In the processing of most of crops, food products, pharmaceuticals, and chemicals, the most energy consuming process is drying. Drying needs thermal energy, which can be obtained by burning combustible fuels or harnessing the solar energy. Since solar energyis abundantly available free of cost, it acts as a source competing with traditional forms for supplying heat. In this project, it is proposed to manufacture Solar Dryers (of Cabinet Type) for crying of crops, food products, pharmaceuticals, and chemicals using the principles of solar drying.

2.0 PRODUCT DESCRIPTION

The Solar Dryer is a device used mainly for drying of crops, food products, pharmaceuticals, and chemicals by removing the moisture present therein through the use of solar heat as a source of energy. The Solar Dryer of Cabinet Type consists of a glass walled chamber, appropriate arrangement for placing the material inside the chamber, air inlet duct with blackened metallic hood, and air outlet chimney. Solar Dryers based on Flat Plate Air Heating Solar Collectors are not considered here.

3.0 MARKET POTENTIAL

The demand of crops, food products, pharmaceuticals, and chemicals is evidently very high and growing day by day. Most of the crops (eg chillies), certain food products (eg pickles), some simple pharmaceuticals (eg snuff), and a few chemicals (eg dyes) are dried in the open sunlight, without using any fuel. This is a very efficient and simple way of using solar energy for drying. But this way has some shortcomings; external environmental impurities get into the material being drie4 and the material can be lost with winds blowing through. The Solar Dryer under consideration can get rid of these shortcomings and moreover expedite the process of solar based drying. There exists

therefore an excellent market for Solar Dryers, particularly at this stage when the recent epidemic outburst has made the public aware of hazards of environmental impurities.

Thanks to the efforts of MNES, this possibility of marketing of Solar Dryers can be tapped comparatively easily.

4.0 TECHNICAL ASPECTS

4.1 Installed & Operating Capacity

It is proposed to install a manufacturing plant with a capacity to manufacture solar dryers (of different cabinet volumes) totalling 600 cubic metres of cabinet volume per annum. However, considering the teething trouble the entrepreneur might have to face initially, it is considered that the plant would operate at 75 % of the installed capacity i.e. 450 cms per annum.

The same manufacturing plant can be used also for manufacturing Solar Kilns, so as to make a good product and market mix.

4.2 Manufacturing Process

The manufacturing process is comparatively simple, but it involves a good deal of research and development work for preparing reliable operation manuals for using the solar dryer.

Mild steel sheets, mild steel sections, aluminium sheets, and aluminium sections are brought to the workshop. They are cut to size, folded, assembled, welded and painted. Toughened glasses are brought to the assembly shop and are fixed on the on slopping wall of the metallic assembly.

The solar dryer is brought to the installation site. The dryer is then properly installed with the inclined glass kept south facing. The user is trained for using the dryer for drying different items; this training can be imparted through an operational manual, like a pressure cooker manual.

If the requisite toughened glasses can be made available near the installation site, they can be fixed after bringing the metallic assembly at the installation site, so as to avoid risk of glass breakage during the transit.

5.0 CAPITAL INPUTS

5.1 Infrastructural Requirements

The total land required for the project is 500 sq.m. This will take care of the, built up area required, open space as well as provision for future expansion also. Out of this, about 80 sq.m. would be required accommodate different equipments 'and also provide space for office and storage facility.

The plant will require total 25 KW (33 HP) to operate different equipments. This power connection will also be sufficient for other miscellaneous purposes like general lighting. Water is required only for the human consumption. The proposed project should have good approachable road to have easy transportation of raw materials as well as finished products.

5.2 Land and Building

As indicated earlier, the proposed project would require about 500 sq.m. of land out of which 80 sq.m. would be required as built-up area. The land and building shall be rented in at an annual rent of Rs. 7.86 lakhs.

5.3 Raw Material Requirements

Mild Steel (sheets and sections), Aluminium (sheets and sections), Toughened Glass, Wooden Materials, Fasteners, Paints, etc. are the main raw materials required, for the project. These raw materials are manufactured both in the public and private sectors and are easily available. The annual raw material requirement works out to an equivalent of Rs 40.25 Lakhs.

5.4 Plant & Machinery

The main machines and equipments required for the proposed project are: She3ring Machine, Folding Machine, Drilling Machines, Arc Welding Machine, Gas Welding Set, Air Compressor, Blacksmithy Equipment "Carpentry Equipment, Glass Handling/Fixing Equipment, Painting Equipment, Testing Equipment, etc. All these machines and machinery required is given in Annexure I. The landed cost of plant and machinery has been estimated to Rs. 1.30 Lakh. This includes packing, forwarding, transportation, erection, etc.

Sr. No.	Description	Nos.
1.	Shearing machine	01
2.	Folding machine	01
3.	Drilling machine	04
4.	Arc welding machine	01
5.	Gas welding set	01
6.	Air compressor	01
7.	Blacksmithing equipment~	01 set
8.	Carpenting equipments	01 set
9.	Glass handling/fixing equip	01 set
10.	Painting equipment	01 set
11.	Testing equipment	01 set
	Total Cost	Rs. 1.56 lakhs

6.0 MANPOWER

Two skilled and five semi-skilled machine operators assisted by five helpers can take care of the entire - production process. All other activities like overall - management of the project, sales, purchase, accounting, etc. are expected to be takencare by the entrepreneur herself. Thus, no separate provision has been made towards this. Details about total wage bill are given below:

Sr. No.	Particulars	No. worker/Rate (Rs./m)	Annual Wages (Rs. lakhs)
1.	Skilled workers to operate equipment	2/1725	0.41
2.	Semi-skilled workers	3/1380	0.49
3.	Helpers	5/1150	0.69
	Total		1.59

7.0 COST OF PROJECT & MEANS OF FINANCE

The estimated total cost of the project has been calculated as below:

(Rs. In Lakhs)

Sr. No.	Items	Total
1.	Land and Building	7.86
2.	Plant and machinery	1.56
3.	Preliminary & Pre-operative expenses	0.27
4.	Miscellaneous fixed assets	0.55
5.	Contingencies	0.94
6.	Margin for working capital	
	Total	**11.18**
	Means of finance	
1.	Term loan	7.83
2.	Promoter's contribution	3.35
	Total	**11.18**

7.1 Preliminary & Pre-operative Expenses

In connection with initiation of the project, the entrepreneur has to incur certain expenses before starting the commercial production. Some of the' expenses are: market survey cost, project report preparation, scrutiny fee of financial institution, travelling, documentation, certain deposits, etc. A provision of Rs. 0.25 Lakh has been made towards this.

7.2 Working Capital Requirement

Working capital requirement for the project has been calculated on the, basis of one month' s stock of raw material, one week semi-finished goods, two week' stock of finished goods, two weeks accounts receivable, and production expenses like wages, salary, power, rent, etc. for one month. Thus, the total working capital requirement - for the project has been estimated to Rs. 6.06 Lakhs. Out of this Rs. 1.82 Lakhs will have to be contributed by the entrepreneur towards margin money required for working capital. The balance of Rs. 4.24 Lakhs would be available

8.0 PROFITABILITY

The profitability of the project has been circulated on the basis of 75 % capacity utilisation. Looking to the total output i.e. 450 cubic metres of Solar Dryers per annum, the sales incomewould be around Rs. 54.00 Lakhs. This has been worked out @ Rs. 12,000/- per cubic metre of Solar Dryer.

The total operating cost has been calculated Rs. 45.73 Lakhs per year. Other aspects are-

- Tie-up with raw material suppliers should be ensured.
- Appropriate training, both in technical and entrepreneurial qualities is needed.
- **Tie-up** state nodal agencies of MNES, and other implementing agencies like Rural Development Departments, Agro Industries corporations, Food / Pharmaceutical/ Chemical Associati6ns/Dealers etc. is suggested.

Profitability Statement

Sr. No.	Items	Amount (Rs. Lakhs)
1.	Sales Realisation	54.00
2.	Total operating cost	
	A. Raw material	35.00
	B. Utilities	1.00
	C. Salary & Wages	1.40
	D. Rent	0.96
	E. Administrative expenses	0.20
	F. Depreciation	0.13
	G. Interest on term loan	0.18
	Working capital loan	0.73
	H. Maintenance	0.17
	Total operating cost	39.77
3.	Operating profit	5.23
4.	Net profit	5.23
5.	Operating profit to income ratio	11.6%
6.	Net profit to income ratio	11.6%

9.00 KEY ELEMENTS

1) Appropriate location in Meghalaya
2) State government subsidy / incentives to become competitive
3) Updated technology

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PROJECT PROFILE OF SOLAR LANTERNS

1.0 INTRODUCTION & PRODUCT

Unlike olden day farmers and travellers, the present day, farmers and travellers are fearful of working in the absence of daylight and yet have to frequently work in the absence of daylight. This situation has been increasing the demand of suitable lighting devices such as lanterns. Lightning involves the burning of some fuel or using electrical energy. The method of burning of fuel for lighting is now-a-days avoided, from the point of view of fire hazards. The method of using electrical energy for lighting has traditionally been using non-rechargeable batteries, and has recently started using rechargeable batteries.

It is in this context of lighting based on rechargeable batteries that Solar Lanterns have made their entry into the market. In Solar Lanterns, charging of batteries is done by using solar energy. Since solar energy is abundantly available free of cost, the market of Solar Lanterns is definitely to grow.

In this project, it is proposed to manufacture Solar Lanterns.

2.0 PRODUCT SPECIFICATIONS

The Solar Lantern .is a device used for generating light when and where required by using solar energy when and where available. It consists of a panel of solar photovoltaic cells, rechargeable battery, energy-efficient lighting tube and/or bulb, switches, plastic casing, transparent plastic lightpass, and convenient handle.

3.0 MARKET POTENTIAL

Since the present day farmers and travellers are fearful of working in the absence of daylight and yet have to frequently work in the absence of daylight, the demand for lanterns has been growing very rapidly with the availability of cost-effective efficient solar photovoltaic cells, reliable rechargeable electrical storage batteries, and attractive

plastic components, the market for Solar Lanterns is growing fast. Thanks to the efforts of MNES, the use of Solar Lanterns is boosted up.

In many remote & hilly areas in Meghalaya the accessibility to traditional grid based power is difficult. In still other cases, the power supply from such sources is erratic. Due to inadequacy of kerosene and other such fuels, one finds many regions languishing in the dark. Solar based lanterns become handy in such cases.

4.0 TECHNICAL ASPECTS

4.1 Installed and operational capacity

It is proposed to install a manufacturing plant with a capacity to manufacture about 1200 Solar Lanterns per annum. However, considering the teething trouble the entrepreneur might have to face initially, it is considered that the plant would operate at 75 % of the installed capacity i.e. 900 Solar Lanterns per annum.

The same manufacturing plant can be used also for manufacturing other Solar Photo Voltaic Gadgets, so as to make a good product and market mix.

4.2 Manufacturing Process

The manufacturing process is more of an assembly work.

Panels of 9 Watt solar photovoltaic cells, 2 Volt 24 AmpereHour rechargeable batteries, 6 Watt lighting tubes, switches, plastic casings, transparent plastic lightpasses, handles, and fasteners are procured and tested under strict quality control.

They are all assembled together to make Solar Lanterns as per tender bids or quotations. They are tested piece by piece for their reliability. Thereafter they are packed and despatched.

5.0 CAPITAL INPUTS

5.1 Infrastructural Requirements

The total land required for the project is 200 sq.m. This will take care of the built up area required, open space as 3 / well as provision for future expansion also. Out of this,

about 40 sq. would be required accommodate different equipments facility and also provide space for office and storage The plant will require total 10 KW to operate different equipments. This power connection will also be sufficient for other miscellaneous purposes like Water is required only for the human general lighting. consumption. The proposed project should have good approachable road and a good environment.

5.2 Land & Building

As indicated earlier, the proposed project would require about 200 sq. of land out of which 40sq.m. would be required as built-up area. The land and building shall be. rented in at an annual rent of Rs 3.40 lakh.

5.3 Plant & Machinery

The main machines and equipments required for the proposed project are: Shears, Folding Equipment, Drilling Machines, Plastic Welding Set, Fixing Equipment, Electrical Testing Equipment, etc. All these machines and equipments are locally available. Detailed list· of machinery required is given in Annexure I. The landed cost of plant and machinery bas been estimated to Rs. 0.72 Lakhs. This includes packing, forwarding, transportation, erection, etc.

6.0 MANPOWER

Two skilled and five semi-skilled machine operators assisted by five helpers can take care of the entire management of the project, sales, purchase, accounting, production process. All other activities like overall etc are expected to be taken care by the

entrepreneur herself. Thus, no separate provision has been made towards this. Details about total wage bill are given below:

Sr. No.	Particulars	No. Worker/ Rate (Rs./m)	Annual wages (Rs. lakhs)
01	Skilled Workers to Operate Equipment	1/1725	0.20
02	Semi-skilled Workers	2/1380	0.33
03	Helpers	3/1150	0.41
		Total	**0.94**

7.0 COST OF PROJECT

Item	(Rs.Lacs)
Land and Building	3.40
Plant & Machinery	0.72
P&P Expenses	0.32
Miscellaneous Fixed Assets	0.27
Contingencies	0.41
Working Capital Margin	0.99
Total	**6.11**
Means of Finance	
Term Loan	4.27
Promoters' Contribution	1.84
Total	**6.11**

8.0 PROFITABILITY

The profitability of the project has been calculated on the basis of 75 % capacity utilisation. Looking to the total output i.e. 900 Solar Lanterns per annum, the sales income would be around Rs 32.40 Lakhs. This has been worked out @ Rs 3,600/- per Solar Lantern. The total operating cost has been calculated Rs 23.01 Lakhs per year. Details about the total cost of production and profitability are given in Annexure II.

9.0 KEY ELEMENTS

1) Appropriate location in Meghalaya
2) State government subsidy / incentives to become competitive
3) Updated technology

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PROJECT PROFILE
OF
SOLAR PHOTOVOLTAIC GADGETS

1.0 INTRODUCTION

The public today has been using numerous personal and domestic electrical gadgets, such as electrical caps, shavers, hair dryers, hand fans, massagers, insect killers, disinfectors. The use of such gadgets has been increasing day by day at an alarming rate. For their electrical energy requirement, these gadgets have traditionally been using non-rechargeable batteries but have recently started using rechargeable batteries.

It is in this context of electric supply based on rechargeable batteries that Solar Photo Voltaic Gadgets can make an entry into the market. In Solar Photo Voltaic Gadgets, charging of batteries is done by using solar energy. Since solar energy is abundantly available free of cost, the market of Solar Photo Voltaic Gadgets is definitely to grow.

In this project, it is proposed to manufacture Solar Photo Voltaic Gadgets.

2.0 PRODUCT DESCRIPTION

The Solar Photo Voltaic Gadget is an personal or domestic use purpose electrical gadget in which the electrical energy is derived from solar energy. It consists of a panel of solar photo voltaic cells, rechargeable battery, basic electrical gadget, electrical switches, casing.

3.0 MARKET POTENTIAL

Numerous personal and domestic electrical gadgets, such as electrical caps, shavers, hair dryers, handfans, massagers, insect killerts, disinfectors, are in vogue today and will be used more and more. With the availability of cost-effective, efficient solar photovoltaic cells, reliable rechargeable electrical storage batteries, and attractive plastic components, the market for Solar Photo Voltaic Gadgets is likely to grow fast. Thanks to the efforts of MNES, the use of Solar Photo Voltaic Gadgets is definitely to be boosted up.

4.0 TECHNICAL ASPECTS

4.1 Installed & Operating Capacity

It is proposed to install a manufacturing plant with a capacity to Gadgets per manufacture about 1200 Solar PhotoVoltaic annum. However, considering the teething trouble the entrepreneur might have to face initially, it is considered that the plant would operate at 75 % of the installed capacity i.e. 900 Solar PhotoVoltaic Gadgets per annum.

The same manufacturing plant can be used also for manufacturing other Solar Lanterns, so as to make a good product and market mix.

4.2 Manufacturing Process

The manufacturing process is more of an assembly work. Panels of 3 Watt solar photovoltaic cells, 2 Volt 8 AmpereHour rechargeable batteries, 6 Watt lighting tubes, basic electrical gadgets, switches, casings, fasteners are procured and tested, under strict quality control. They are all assembled together to make Solar PhotoVoltaic Gadgets as per quotations. They are tested piece by piece for their reliability. Thereafter they are packed and despatched.

4.3 Raw Material Requirements

Panels of 3 Watt solar photovoltaic cells, 2 Volt 8 AmpereHour rechargeable batteries, 6 Watt lighting tubes, basic electrical gadgets, switches, casings, and fasteners are the components/materials required for this project. These are manufactured both in the public and private sectors and are easily available. The annual raw material requirement works out to an equivalent of Rs 20.70 Lakhs.

5.0 CAPITAL INPUTS

5.1 Infrastructural Requirements

The total land required {or the project is 200 sq.m. This will take care of the built up area: required, open space as well as provision for future expansion also. Out of this, about 40 sq.m. would be required accommodate different equipments facility. And also provide space for office and storage.

The plant will require total 10 KW to operate different equipments. This power connection will also be sufficient for other miscellaneous purposes like general lighting. Water is required only for the human consumption. The proposed project should have good approachable road and a good environment.

5.2 Land and Building

As indicated earlier, the proposed project would require about 200 sq.m. of land out of which 40 sq.m. would be required as built-up area. The land and building shall be rented in at an annual rent of Rs 3.40 lakh.

5.3 Plant & Machinery

The main machines and equipments required for the proposed project are: Shears, Folding Equipment, Drilling Machines, Plastic Welding Set, Fixing Equipment, Electrical Testing Equipment, etc. All these machines and equipments are locally available. The landed cost of plant and machinery has been estimated to Rs 0.72 Lakhs. This includes packing, forwarding, transportation, erection, etc.

(Rs. In lakhs)

Sr. No.	Description	Amount
1.	Land and Building	3.40
2.	Plant & Machinery	0.72
3.	Preliminary & Pre-operative expenses	0.33
4.	Misc. fixed assets	0.30
5.	Contingencies	0.41
6.	Margin for working capital	0.99
7.	**Total**	6.15
8.	**Means of Finance**	
9.	Term loan	4.31
10.	Promoter's contribution	1.84
11.	**Total**	6.15

Sr. No.	Description	Nos.
1.	Shears	04
2.	Folding equipment	01
3.	Drilling machines	04
4.	Plastic welding set	01
5.	Fixing equipment	01 set
6.	Electrical testing equipment	01 st
7.	**Total**	0.69 lakhs

Name & Addresses of the Suppliers

1. Machinery and Tools Centre, Kadia Kui, Tilak Road, Ahmedabad 380001
2. Mehsana Tools Traders , Nr. Gandhi Gate, Sant Kabir Road, Baroda 390001
3. Stativolt Industries, A54 GIbe Electronics, Gandhinagar 382044

6.0 MANPOWER

Two skilled and five semi-skilled machine operators assisted by five helpers can take care of the entire - production process. All other activities like overall management of the project, sales, purchase, accounting, etc are expected to be taken care by the entrepreneur herself. Thus, no separate provision has been made towards this. Details about total wage bill are given below:

Sr. No.	Particulars	No. worker/Rate (Rs./m)	Annual Wages (Rs. lakhs)
1.	Skilled workers to operate equipment	1/1725	0.20
2.	Semi-Skilled workers	2/1380	0.33
3.	Helpers	3/1150	0.41
	Total		0.94

7.0 COST OF PROJECT & MEANS OF FINANCE

The estimated total cost of the project has been calculated as below:

(Rs. In Lakhs)

Sr. No.	Items	Total
1.	Land and Building	3.40
2.	Plant and machinery	0.72
3.	Preliminary & Pre-operative expenses	0.33
4.	Miscellaneous fixed assets	0.30
5.	Contingencies	0.41
6.	Margin for working capital	0.99
	Total	6.15
	Means of finance	
1.	Term loan	4.31
2.	Promoter's contribution	1.84
	Total	6.15

8.0 PROFITABILITY

The profitability of the project has been calculated on the basis of 75 % capacity utilisation. Looking to the total output i.e. 900 Solar PhotoVoltaic Gadgets per annum, the sales income would be around Rs 32.40 Lakhs. This has been worked out @ Rs. 3,600/- per Solar PhocoVoltaic Gadget. The total operating cost has been calculated Rs 26.45 Lakhs per year.

Profitability Statement

Sr. No.	Items	Amount (Rs. Lakhs)
1.	Sales Realisation	27.00
2.	Total operating cost	
	A. Raw material	18.00
	B. Utilities	0.24
	C. Salary & Wages	0.83
	D. Rent	0.48
	E. Administrative expenses	0.20
	F. Depreciation	0.06
	G. Interest on term loan	0.09
	Working capital loan	0.33
	H. Maintenance	0.08
	I. Marketing Commissions	2.70
	Total operating cost	23.01
3.	Operating profit	3.99
4.	Net profit	3.99
5.	Operating profit to income ratio	14.7%
6.	Net profit to income ratio	14.7%

9.0 KEY ELEMENTS

1) Appropriate location in Meghalaya
2) State government subsidy / incentives to become competitive
3) Updated technology

(19)

PROJECT PROFILE
OF
SOLAR HOT WATER SYSTEMS

1.0 INTRODUCTION

Hot water is used in domestic sector for bathing, washing of clothes and dishes. In industrial and commercial sectors, it is used as process water, boiler feed water and cleaning of equipment. Presently, the hot water requirement in the domestic sector is being met through electric geysers, LPG, kerosene, etc. in the urban areas, and agricultural waster, animal waste, fire-wood and charcoal in the rural areas. In commercial sector, the supply of hot water is met through a electrical geysers whereas for industrial applications, fuel oil-tired boilers are normally used. Thus, the fuel required for supply of hot water is either electricity or the petroleum products in urban areas. Increasing use of hot water is leading to large scale demand for electricity and increasing demand for the petroleum products as also denudation of forests resulting in environment pollution, soil erosion, etc.

Abundant solar energy is available in the country. The average global irradiation in the country is about 5.5KWH/m^2 /day, ranging from a value of 4.65 KWH/ m^2 /day in the north eastern region to 5.75 KWH/ m^2 /day in Rajasthan and Gujarat.

Solar energy which is an everlasting and freely available local source of energy can be used for meeting heat energy requirement in different temperature ranges, including hot water. It is in this background that a project to manufacture "Solar Hot Water Systems" is being prepared.

2.0 PRODUCT DESCRIPTION

Solar water heating system basically consists of a solar collector which absorbs solar radiation and converts it into heat energy. This heat in turn is transferred to the water flowing through the collector. The flow of water is either natural because of thermosyphon or forced using a circulation pump with controls. The hot water is stored in an insulated tank, which in turn can be used as and when required.

Collector-cum-storage heater is yet another type of solar water heater.It consists of an insulated box with wider face painted black and provided with glass glazing on the top side. The cold water entering at the bottom of the box gets heated up and the hot water is drawn from the top of the box. Some of these solar heaters are also provided with insulated covers which can be used to cover the glazed face during night to minimise drop in the temperature of hot water during night and thus make hot water available next morning.

Solar hot water systems are offered in configuration, covering a wide range of sophistication and end use specifications. solar hot water systems can be divided categories

a) Thermosyphon type

b) Force flow type

In this case, it is proposed to fabricate thermosyphon based systems, primarily catering to the domestic sector. The product shall confirm to IS 12976:1992.

3.0 MARKET POTENTIAL

At the national level about 12500 domestic and 6000 industrial solar water systems have been installed till March, 1993, covering a collector area of around 2.48 lakhs sq.m. This in all has been saving the energy of around 130 15 millions KWH per year as against 5 X 10^{15} KWH/year of estimated solar energy potentials. The revised action plan of MNES for Eighth Five Year Plan envisages installation of around 11.00 lakh sq.m. of collector area, implying an annual installation of about 2.2 lakh sq.m. This is based on the thrust proposed by the ministry to provide a market oriented and commercial approach to the solar hot water systems. Thus at the national demand, the demand appears promising. In so far as Gujarat is concerned, a time series analysis of project in domestic installation exhibits the following trend.

Expected demand lpd (year) = 67683.3+10405.9 (year-1985)

Assuming that 100 lpd can be got from a collector area of 1.6ms, the demand for instance, in 1995 would be about 2748 collectors. Gujarat has around 15 manufacturers supplying at an average about 100 collectors/annum. Thus, considering the national and

Gujarat scenario, there appears scope for entry into production of solar water heating systems.

4.0 TECHNICAL ASPECTS

4.1 Installed & Operating Capacity

It is proposed to install equipment with a capacity to manufacture and install 110 Solar Hot Water Systems (SHWS)/annum. However, considering the teething trouble the entrepreneur might have to face initially, it is considered that the plant would operate at 80% of the installed capacity i.e. 90 SHWS/annum.

4.2 Manufacturing Process

It is proposed to produce flat plate collectors. Each solar collector shall be designed and constructed so that it has strength, rigidity and durability. All parts shall be constructed and finished with uniformity and the workmanship shall include removal of rough edges and burns where it would interface with proper assembly. For aluminium box, the side channels may be welded at the corners by gas brazing. Bottom sheet may be joined with spot welding. The cover plate shall be of toughened glass. The sheets for absorber would be of copper and would consist of c riser and header. Selective coating shall be used; full length of all risers shall be welded with absorber sheet. Glass wool would be used as insulation material. Sealing of the glass with collector box would be undertaken by gaskets using neoprene.

The panel coil, storage tanks, etc. would be assembled, inspected and commissioned.

4.3 Raw Material Requirement

Aluminium, toughened glass, copper, black paint, steel and hardwares, etc. are the principal raw materials required for the project. These raw materials are manufactured, both in the public and private sector and are available at various outlets. The annual raw material requirement works out to an equivalent of Rs.14.00 lakhs.

5.0 CAPITAL INPUTS

5.1 Infrastructural Requirements

The total land required for the project is 500 sq.m. This will take care of the built up area required, open space as well as provision for future expansion. Out of this, about 300 sq.m. built up would be required to accommodate different equipments and also to provide space for office and storage facility.

The plant will require total 30 HP to operate workshop machines. This power connection also includes for other misc. purposes like general lighting. Water is required only for the human consumption and equipment testing. The proposed project should have good approachable road to have easy transportation of raw material as well as finished products.

5.2 Land and Building

As indicated earlier, the proposed project would require about 500 sq.m. of land out of which 300 sq.m. would be required as built-up area. It is proposed to hire this accommodation on rental basis.

5.3 Plant & Machinery

The main equipment and machinery required for the proposed project are Piltar Drilling Machine, Air Compressor, Shearing Machine, Plate Bending Machine, Hacksaw and Soldering Set. All these machines and equipments are easily available. Detailed list of machinery required in given in Annexure I. The erected cost of plant and machinery has been estimated to Rs. 2.76 Lakhs. This includes packing, forwarding, transportation, erection, etc.

List of Plant & Machinery

1. Pillar drilling machine with 1 HP accessories
2. Air compressor with 1.5 HP accessories ,-
3. Gas welding and brazing sets

4. Hand shearing machine
5. Welding machine
6. Plate bending machine
7. Head screw press
8. Welding transformer
9. Paint equipment

6.0 MANPOWER

Six skilled machine operators assisted by three helpers can take care of the entire production process. All other activities like overall management of the project, sales, purchase, accounting, etc. are expected to be taken-care by the entrepreneur herself. Thus, no separate provision has been made towards this. Details about total wage bill are given below;

List of Manpower

Sr. No.	Description	No.	Annual Wages
1.	Skilled workers to operate equipment	6 (1725)	1.24
2.	Helpers	3 (1150)	0.41
			1.65

7.0 COST OF PROJECT & MEANS OF FINANCE

The estimated total cost of the project has been calculated as below:

(Rs. In Lakhs)

Sr. No.	Items	Total
1.	Land and Building	
2.	Plant & Machinery	2.76
	Preliminary & Pre-operative expenses	0.55
	Misc. fixed assets	0.77
	Contingencies	0.27
	Margin for working capital	1.43
	Total	**5.78**
	Means of Finance	
	Term loan	4.04
	Promoter's contribution	1.74
	Total	**5.78**

8.0 PROFITABILITY

The profitability of the project has been calculated on the basis of 80% capacity utilisation. Looking to the total output i.e. 90 SHWS/annum, the sales income would be around Rs. 26.40 Lakhs. This has been worked out @ Rs. 29280/- per system.

The total operating cost has been calculated Rs. 21.78 Lakhs per year.

Break-Even Analysis

(Rs. In Lakhs)

Sr. No.	Items	Amount
A	**Fixed Cost**	
1.	Rent, Taxes	0.84
2.	Salary & Wages	-
3.	Maintenance & Repairs (40%)	0.16
4.	Utilities (30%)	0.21
5.	Depreciation	0.30
6.	Administrative Expenses (50%)	0.25
7.	Interest (Term-Loan)	0.26
		2.02
	Fixed cost/unit = Rs. 0.0189 lakhs	
B	**Variable Cost**	
1.	Raw Material	14.00
2.	Wages	0.72
3.	Maintenance & Repairs (60%)	0.24
4.	Utilities (70%)	0.49
5.	Administrative Expenses (50%)	0.25
6.	Interest (Working Capital)	0.55
		16.25
C	Income - Variable Cost = 22.00 - 16.25 = 5.75	
D	Contribution.: Rs. 0.0638 lakh	
E	Break Even Point: *0.0189jO.0638X* 100 = 29.64%	

9.00 KEY ELEMENTS

1) Appropriate location in Meghalaya
2) State government subsidy / incentives to become competitive
3) Updated technology

(20)

PROJECT PROFILE
OF
PACKAGED DRINKING WATER/MINERAL WATER

1.0 INTRODUCTION & PRODUCT

It is needless to mention that water, a compound of Hydrogen and Oxygen is a precious natural gift which is very essential for survival of mankind including animals. The water used for potable purposes should be free from undesirable impurities. The water available from untreated sources such as Well, Boreholes and spring is generally not hygienic and safe for drinking. Thus it is desirable and necessary to purify the water and supply under hygienic conditions for human drinking purpose.

As the name implies, the mineral water is the purified water fortified with requisite amounts of minerals such as Barium, Iron, Manganese, etc. which can be absorbed by human body. It is either obtained from natural resources like spring and drilled wells or it is fortified artificially by blending and treating with mineral salts. The mineral water shall be manufactured and packed under hygienic conditions in properly washed and cleaned bottles in sterilised conditions.

2.0 MARKET POTENTIAL

Unfortunately sufficient safe potable water is not available everywhere in the country, either harmful chemical substances are found in the layers of earth which enter into water or it may be contaminated due to pathogenic micro-organisms. If such water is consumed, the body suffers from water borne diseases. Due to this, it has become imperative to process and bottle safe potable water for the mankind in prevailing conditions. The demand for purified water becomes more during summer season. Although few companies have already entered in the bottling of safe potable water and mineralised water, but still huge gap is there in between demand and supply at all metropolitan-cities and towns. The product is widely accepted in offices, restaurants, railway stations, airport, bus stands, hospitals and to some extent even in rich house-

holds. So there is good scope for establishing the units for processing and bottling plain and mineralised drinking water in different parts of the country including Meghalaya.

Basis and Presumptions

This project has been drawn on the basis of following presumptions.

1.	Working hours per shift	8
2.	Number of shift/day	3
3.	Number of working days per annum	300
4.	Total number of working hours	72
5.	Working efficiency	75%
6.	Total period for achieving maximum capacity utilisation	Third year from the date of commencement of production
7.	Margin money	25% of Capital investment
8.	Rate of interest of capital	15% per annum
9.	Construction Cost of Building, Cost of Land, Labour Charges and Cost of Plant, Machinery and Equipment have been considered as per prevailing rates in the market.	
10.	Cost of Installation and Electrification of Machinery and Equipment has been taken at the rate of 10% of the cost of Plant and Machinery.	
11.	Operative period of the project has been considered as 7 years.	

3.0 TECHNICAL ASPECTS

3.1 Processing and Bottling

Raw water to be processed is collected in tanks. A known quantity is pumped into the above tank where the water is dozed with alum for coagulation with heavy metals or insoluble matters. The water after coagulation is allowed to settle for an hour. The impurities may be removed by Reverse Osmosis techniques also. The supernatant water is taken to the chlorination tank where primary disinfection is brought about by bubbling chlorine gas. The water is then passed through sand filters for trapping of undissolved impurities. The water after sand filteration is passed through Carbon filters for removal of odour, colour and also for dechlorination. It is then passed through series of micro fillers comprising 5 micron, 1 micron and 0.4 micron filter followed by ultraviolet disinfection system for terminal disinfection. Packing is done in PET bottles of 1 litre capacity through an automatic rinsing, filling, and capping machine fitted with an Ozone

generator. The bottles after capping are shrink wrapped (Optional) and packed in corrugated boxes of one dozen each.

3.2 Quality Control and Standards

The plain drinking water has to be bottled in pet bottle as per IS Specifications (IS:14543:1998: Packaged Drinking Water and. IS:13428:1998: Packaged Mineral Water). The details of the specification can be obtained from Bureau of Indian Standard, Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi 110002.

Production Capacity

Quantity	: 45 lakh Bottles per annum
Value	: Rs. 281.25 lakh.
Motive Power	50 H.P.

Pollution Control

Although this unit will not affect the environment, but the enterpreneurs are advised to obtain, No Objection Certificate from competent authority of State Pollution Control Board. They should develop Kitchen Garden in the factory premises to utilise waste water from the plant.

Energy Conservation

Suitable measures should be adopted to use appropriate amount of fuel and electricity. The promoters should arrange periodic auditing of electrical consumption, as the unit will be running in three shifts. Unnecessary operation of machines should be controlled to avoid excess consumption of electricity. Natural ventilation in production premises may be made available to avoid use of electrical power during day hours.

4.0 CAPITAL INPUTS

4.1 Land and Building

Sr. No.	Land and Building	Amount (Rs. In lakh)
1.	Land (1000 sq.m)	10.00
2.	Total covered area required for filteration, raw material storage, packaging material storage, machinery, Spare parts, store, Finished goods, Office, Quality Control Lab, Toilets, Electrical Switch room and miscellaneous etc.500 sq.m @ Rs 3500 per Sq. ft.	17.50
3.	Boundary wall and Civil Works on gate etc.	3.30
	Total	30.80

4.2 Plant & Machinery

Sr. No.	Items	Ind./ Imp	Qty	Total (in Rs lakhs)
i)	Alum. Treatment tanks	Ind.	3	1.44
ii)	Reverse Osmosis Plant 2000 Lit/	-do-	1	3.84
iii)	Chlorination tanks made of S. Steel	-do-	2	0.96
iv)	Sand filter	-do-	1	0.60
v)	Activated Carbon filter	-do-	-	0.72
vi)	Micron filters (5, 1 and 0.4 Mic)	-	3	0.48
vii)	Ultraviolet disinfectant system	-	1	0.38
viii)	Electronic doser for alum	-	1	0.36
ix)	Electronic doser for Chlorine	-	2	0.36
x)	Ozone Generator	-	1	3.78
xi)	Raw and Purified water collection tanks with motor and accessories	-	4	1.92
xii)	Automatic rinsing filling and capping machine	-	-	9.00
xiii)	Shrink wrapping machine for bottle	-	-	0.18
xiv)	Miscellaneous tools equipments, pipeline etc. and Plastic crates etc.	-	-	1.80
xv)	Laboratory testing and Quality Control, Micro-biological instruments etc	-	-	1.80
	Electrification and Installation charges @ 10% of plant and Machinery			2.76
	Total			30.38

Sr. No.	Other Fixed Assets	Total (in Rs lakhs)
i)	Cost of furniture, furnishing and Official accessories	0.96
ii)	Cost of deep bore tubewell for water reservoir	1.43
iii)	Security Deposit to Electricity Deptt. etc.	1.10
iv)	Preliminary and Pre-operative Expenses including Company Formation, Project Preparation, Technical Consultancy, Travelling Expenses, Interest during construction period, Start-up Expenses etc.	1.65
v)	Delivery van and contingency etc.	5.5
	Total	10.64

Sr. No.	Total Fixed Assets	Total (in Rs lakhs)
1	Land and Building	30.80
2	Plant and Machinery	30.38
3	Other Fixed Assets	10.64
	Total	71.82

5.0 MANPOWER

5.1 Administrative and Supervisor

Sr. No.	Total Fixed Assets	No.	Salary	Total (in Rs lakhs)
1.	Factory Manager	1	6900	6900
2.	Clerk-cum Typist	1	2875	2875
3.	Store cum-Purchase Officer	1	2875	2875
4.	Accountant-cum-Cashier	1	3450	3450
5.	Sweeper (part time)	1	1150	1150
	Total	5		17,250

5.2 Technical Staff

Sr. No.	Designation	No.	Salary	Total (in Rs lakhs)
1.	Production Manager cum-Chief Chemist	1	6900	6,900
2.	Lab.	1	2300	2,300
3.	Production Supervisor	3	3600	10,800
4.	Skilled Workers, including Electricians and Mechanic Driver	9	3600	32,400
5.	Un-skilled Workers	3	2300	6,900
6.	Chowkidar	3	2300	6,900
	Total	20		66,200
	Total Salary and Wages Rs. 66,200 + Rs. 17,250			83,450
	Perks and benefits @ 8.5% of salary and wages			6,258.25
	Total			89,708.25 ~90,000
	Say			0.90 lakh

5.3 Utilities

Sr. No.	Utilities	Total (in Rs lakhs)
1.	Electricity 40 x 0.746 x 20 x 25 x 2.75	0.48
2.	Fuels and other	0.04
	Total	0.52

5.4 Working capital

Sr. No.	Working capital (per month)	Total (in Rs lakhs)
1.	Raw Materials/Packing Materials	17.10
2.	Salary and Wages	0.77
3.	Utilities	0.45
4.	Recurring Expenses	0.11
	Total	18.45
	Working capital for 3 months 18.43 x 3 = Rs. 55.29 lakhs	

6.0 COST OF PROJECT

6.1 Total Capital Investment

Sr. No.	Items	Total (in Rs lakhs)
1.	Fixed Assets	71.82
2.	Working Capital (for 3 months)	55.29
	TOTAL	127.11

7.0 PROFITABILITY

I.	Cost of production (per annum)	Total (in Rs lakhs)
(i)	Working capital for one year	221.16
(ii)	Depreciation on Building @ 5% p.a.	1.45
(iii)	Depreciation on Plant and Machinery and Miscellaneous @ 10% p.a.	3.50
(iv)	Interest on Total Capital Investment @ 15%	18.04
		244.15
II.	**Turnover**	**Total (in Rs lakhs)**
	By sale of 45 lakh bottles (3.75 lakh crates of 12 bottles @ Rs 75 per crate (Factory premises)	281.25
III.	**Profit (per annum)**	**Total (in Rs lakhs)**
	Profit = Turnover – Cost of Production = 281.25 – 244.15 = Rs 37.10 lakh	281.25
IV.	Net Profit Ratio = ---------- = 13.19%	
V.	Rate of Return -------- = 30.84% (Say 31%)	

8.0 KEY ELEMENTS

1) Life style of people in Meghalaya
2) Market linkages : Bulk buyers
3) Stringent quality control

(21)

PROJECT PROFILE OF SERICULTURE

1.0 INTRODUCTION

Silk fibre is protein produced from the silk glands of silkworms. The technique of silk production is known as sericulture. It is an agro industry and is playing an important role in the economic development of silk rearing pockets of rural India providing gainful occupation to 64 lakh persons. One hectare of Mulberry generates employment of about 12 man years and family members ranging in age between 18 to 60 years can engage themselves in various sericulture activities, such as, cultivation of food plants (Mulberry, castor etc., silkworm rearing, egg production, silk reeling, weaving etc. India is the second largest producer of silk in the world after China and has the distinction of producing all the four types of silk i.e. (a) Mulberry silk (91.7%); (b) Tasar silk (1.4%); (c) Eri silk (6.4%); and (d) Muga silk (.5%) which are produced by different species of silkworms.

2.0 PRODUCTS

Mulberry silk is produced extensively in the States of Karnataka, West Bengal and Jammu & Kashmir. Similarly, Tasar silk worms are reared traditionally by the tribes of Madhya Pradesh, Bihar and Orissa; Muga and Eri silk are produced exclusively in Assam. The food plant of silkworms is Mulberry for producing Mulberry silk. Tasar silk producing silkworms feed on *Terminalia tomentosa, and Terminalia arjuna*. Similarly, Muga silk producing silkworms feed on scalu or Som; Eri silk producing silkworms feed on castor (*Ricinus communis*).

3.0 MARKET POTENTIAL

The demand for silk has always been high for a variety of fabrics ranging from sarees to shirting etc. Natural silk faces competition from artificial silk which is imported but consumers having set preferences for natural silk are not easily weaned away by artificial silk. Besides indigenous demand, there is a huge export demand and Indian silk is popular all over the world. Silk earns considerable foreign exchange for the country.

Total export earnings during 2000-01 was over Rs.1,400 crores. The Silk Board provides assistance for international marketing to those interested in export.

4.0 TECHNICAL ASPECTS

4.1 Soil and Climate

Mulberry can be grown on a wide range of soils upto 4,000 ft. above MSL. Flat land or gently sloppy or undulating land gives good crop. The ideal temperature for silkworm rearing is 260 C to 270C and humidity conditions 70% to 90%.

4.2 Land Preparation & Planting

Land is ploughed to a depth of 35 to 40 cms. The soil is well pulverized and 20 tonnes of compost per hectare is mixed thoroughly well in the soil. Commonly, mulberry is cultivated by propagation by planting 2 budded cuttings of well-developed branches from at least 8 months old mulberry plants at the commencement of the rainy season.

4.3 Application of Fertilisers & Interculturing

Scientific cultivation of mulberry is the basic need of sericulture. Timely application of fertilizers, irrigation, weeding, hoeing, irrigation, plant protection measures etc. are very important for better plant growth and leaf yield. Application of fertilizers depends on soil test results and availabilities of irrigation water. However, on an average 250:125:125 kgs. Of NPK per hectare is applied per year. First dose is applied 2 to 21/2 months after planting, second dose in the fourth month and subsequent doses immediately after each pruning.

4.4 Pruning

Pruning is done to ensure vigorous growth of plants and for production of good quality leaves. Pruning operation is taken up when plants attain a height of about 2 meters and the stems/branches have attained a girth of not less than 2 cms at the bottom.

4.5 Harvesting & Yield

Usually the first picking of leaves is undertaken six months after planting. After the first picking, subsequent pickings are done at an interval of about 8 weeks depending upon the correct stage of maturity of leaves. As regard yield under rain fed conditions, 10 to 15

tons of mulberry leaves per hectare per year can be expected. But under irrigated condition, the yield may be around 25 to 30 tons of leaves per hectare per year.

4.6 Rearing of Silkworms

Rearing of silkworms on scientific method is key to bumper cocoon harvest and to have quality silk production. Aspects to be especially taken care of are: Rearing houses and rearing equipments; feed material and feed preservatives; and rearing techniques.

5.0 CAPITAL INPUTS

5.1 Details of Equipment

Sr. No.	Items	Quantity	Rate	Value (Rs.)
1.	Farm Implements (Spade, Hoe, Khurpi; Baskets etc.)	LS	LS	6,000.00
2.	Planting			1,800.00
3.	Misc.			1,800.00
			TOTAL	**9,600.00**

5.2 Working Capital Requirement

Sr. No.	Items	Amount (in Rs)
1.	Compost	3,450.00
2.	Fertilisers	1,725.00
3.	Irrigation for 2 crops	2,300.00
4.	Interculturing & plant protection for 2 crop Rs.500x2	1,150.00
5.	Harvesting of leaves and feeding – 2 crops	2,300.00
6.	Cost of laying – 2 crops	4,600.00
7.	Pruning & misc. costs/expenses	1,725.00
	TOTAL	**17,250.00**

6.0 COST OF PROJECT & MEANS OF FINANCE

6.1 Cost of Project

Sr. No.	Items	Amount (in Rs)
1.	Land (Owned) preparation & cost of plants	2,300.00
2.	Cost of equipments	9,200.00
3.	Contingencies, misc. & insurance etc.	5,750.00
4.	Working capital	17,250.00
	TOTAL	**34,500.00**

6.2 Means of Finance

Sr. No.	Items	Total Cost (in Rs)	%age
1.	Promoter's contribution	-	-
2.	NSTFDC - Term Loan	31,050.00	90.00
3.	SCA – Term Loan/Subsidy	3,450.00	10.00
	TOTAL	**34,500.00**	100.00

Note: The State Channelising Agencies shall arrange to provide subsidy to beneficiary (ies) as per norms of their Corporation. Further, SCAs may also make efforts to avail incentive/subsidy from other centrally sponsored schemes.

7.0 PROFITABILITY

I.	FIRST YEAR	Per annum/unit Amount (in Rs.)
A.	**EXPENDITURE**	
(I)	**Crop Expenses**	
(a)	**First crop**	
(i)	Land preparation	500.00
(ii)	Application of 20 tons of compost @ Rs. 150 per ton	3,000.00
(iii)	Planting	1,500.00
(iv)	Application of fertilizers	1,500.00
(v)	Irrigation (15 irrigations @ Rs. 100/irrigation)	1,500.00
(vi)	Interculturing & Plant protection measures	500.00
(vii)	Harvesting of leaves and feeding	1,500.00
(viii)	Cost of laying @ 1000 layings per crop per hectare @ Rs.2/- laying	2,000.00
	Total (a)	**12,000.00**
(b)	**Second Crop**	
(i)	Pruning	500.00
(ii)	Application of fertilizers	1,000.00
(iii)	Irrigation (8 irrigations @ Rs. 100/- irrigation)	800.00
(iv)	Interculturing & Plant protection measures	500.00
(v)	Harvesting of leaves and feeding	1,200.00
(vi)	Cost of laying @ 1000 layings @ Rs.2/- laying	2,000.00
	Total (b)	**6,000.00**
(c)	**Third crop (same as second crop)**	**6,000.00**
(d)	**Fourth crop (same as second crop)**	**6,000.00**
(e)	**Total expenditure for first year (four crops) before interest for the year [a+b+c+d]**	**30,000.00**
(II)	**Sustenance for beneficiary/family**	**24,000.00**
(III)	**Interest for the year**	**2,000.00**
	Total Expenditure	**56,000.00**
	Sales realisation	
	Value of 1500 kgs of cocoons from four crops (375 kgs per crop) @ Rs.70 per kg	1,05,000.00
	Less expenditure for first year	56,000.00
	Net return for First Year	**49,000.00**
II.	**SECOND YEAR**	
A.	**EXPENDIRURE**	
(i)	First crop (as shown earlier)	12,000.00
(ii)	Second crop (as shown earlier)	6,000.00
(iii)	Third crop (as shown earlier)	6,000.00
(iv)	Fourth crop (as shown earlier)	6,000.00
(v)	Fifth crop (as shown earlier)	6,000.00
(vi)	Interest	2,000.00
(vii)	Sustenance for beneficiary/family	24,000.00
	Total expenditure for the second year for five crops	**62,000.00**
	Sales realisation	
(i)	Value of 1875 kgs of cocoons from 5 crops (375 kgs per crop) @ Rs.70 per kg	1,31,250.00
(ii)	Less expenditure during 2nd year	62,000.00
	Net return for Second Year onwards	**69,250.00**

From second year onwards, the farmer is likely to get a net annual return of Rs.69,000/- per hectare upto 12 years. Thereafter, the mulberry plants are replanted. However, part planting is shown every year in the project to provide tender leaves which are largely available from young plants.

INTEREST, MORATORIUM & REPAYMENT PERIOD FOR BENEFICIARIES

1.	Interest	: 6% p.a. on NSTFDC term loan.
2.	Moratorium period	: 10 months from date of release of final installment by SCA.
3.	Repayment period	: 5 years excluding moratorium period.

8.0 ASSUMPTIONS/PARAMETERS

- If land is uneven or sloppy expense on terracing shall be higher and needs adjustment.
- Technical and marketing assistance can be had from the Silk Board and Central Silk Research Institute.
- No extra cost is assigned to land as it is assumed to be available within the family or provided by a welfare organization.
- Cost of project may vary in different Regions.
- It is assumed that the products/services have demand in the project area and beneficiaries are having the relevant experience.

9.0 KEY ELEMENTS

1) State government subsidy / incentives to become competitive
2) Participation of farmers
3) Cluster approach

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PROJECT PROFILE
OF
PIG REARING

1.0 INTRODUCTION

Pig Rearing is one of the traditional activity in India in general and Meghalaya in particular carried out by rural folk. Among various livestock activities, piggery is most efficient way of meat production utilizing kitchen waste, vegetable waste etc. Though initially local breeds have been raised, nowadays exotic pig breeding is popular and pork from such animal is having wide acceptance. Further, pig farming requires small investment on building and equipments.

2.0 MARKET POTENTIAL

The pig population of the country is 12.79 million as per 1992 live stock census and 13.291 million as per 1997 provisional result of census from states and constitutes around 1.30% of total world population. Though there is vast export market for piggery products, India's share is at dismal level. As meat is preferred food in Western countries, there exists a strong export market for pig/pork products, provided, it is from well-bred pigs and product in hygienic conditions.

3.0 TECHNICAL ASPECTS

- The space requirement for one boar is 70 sq.ft. and for lactating sow with its piglet is
- 100 sq.ft.
- A sow of 8-9 months of age can be bred and the number of furrowing per year is 2and number of piglets per sow per furrowing for working out profitability is taken as 7 after adjusting for mortality.
- The ratio of Sow and boar need to be maintained at the ratio of 10:1.
- The pigs may be fed by both kitchen waste and by concentrated feed. The ratio of concentrated feed to total feed may be maintained as 30% and that of kitchen garbage is 70%.

- Housing Management: Well ventilated, raised ground shall be used.
- Selection of breeding stock: Cross bred (or) exotic stock, which are ready for breeding may be purchased. Animals which are having pedigree record for producing highest litter may be purchased. The animals are to be vaccinated immediately after the purchase.
- Feeding management: Utilise non-conventional feed resources viz. waste from kitchen/hotels so as to minimize the cost.
- Breeding care: Pigs are highly prolific in nature and two furrowings in a year shall be planned.

4.0 WORKING CAPTIAL REQUIREMENT

The animals shall be fed by kitchen waste and concentrated fed in the ratio of 70:30.

Sr. No.	Particulars	Amount (in Rs.)
(i) (a)	(i) Feed : 3.0 kg per Boar/day [2 boar] and 3.5 kg. per sow/day [for 20 sows] for 150 days = 11400 kg. (ii) Kitchen garbage @ Rs.0.75 kg (70% to total feed) : 7980 kg. (iii) Concentrated feed (30% of total feed) @ Rs.6.00 per kg : 3420 kg.	 6882.75 23,598.00
(b)	Weaner feed 6 kg/day @ 0.2 kg. per piglet/day for 120 piglets for 60 days	9,936.00
(c)	Ist batch of fattener cost 1.5 kg. per fattener pig for 60 piglets for 60 days 5400 kg Total feed: 5400 kg Kitchen garbage @70%: 3780 kg @0.75 kg Concentrated feed @30%: 1620 kg @Rs.6.00 kg	 3260.25 11178.00
(ii)	Veterinary expense /medicines/supplements etc.	1 725.00
(iii)	Miscellaneous and marketing expenses	2 645.00
	TOTAL	**59,225.00**

- The feed requirement for breeding stock is considered for 150 days, 60 days for weaner and fattener stock.

- The feed for fattener stock for remaining period will be met from internal resources.

5.0 COST OF PROJECT

Maximum unit size is 120 fatteners. Accordingly, the cost of project is prepared as follows:

Sr. No.	Particulars	Amount (in Rs.)
1.	Land and building	Own
2.	Cost of Animals Male pigs (Boar) - 2 animals @ Rs.2500/- per animal. Female pigs (Sow) 20 animals @ Rs.1800/- per animal.	47,150.00
3.	Miscellaneous fixed assets	2,875.00
4.	Preliminary and pre-operative expenses including insurance, cost escalation, contingencies etc.	5,750.00
5.	Working capital	58,725.00
	TOTAL	**1,14,500.00**

6.0 MEANS OF FINANCE

Sr. No.	Particulars	Amount (in Rs.)	%age
1.	Promoter's contribution	2,290.00	2.00
2.	Margin Money Loan/Subsidy - SCA	20,610.00	18.00
3.	NSTFDC - Term Loan	91,600.00	80.00
4.	**TOTAL**	**1,14,500.00**	**100.00**

Note: The State Channelising Agencies shall arrange to provide subsidy to beneficiary(ies) as per norms of their Corporation. Further, SCAs may also make efforts to avail incentive/subsidy from other centrally sponsored schemes.

7.0 PROJECT ECONOMICS AND ASSUMPTIONS

7.1 Sales Realisation Per Annum/unit

Sales Realisation		**Per annum/unit**
Sale of Fatteners: 120 nos x 1440	=1,72,800.00	Rs.2,88,000.00
Sale of Adult: 120 nos x 800	= 1,15,200.00	
Total	= 2,88,000.00	

7.2 Cost of Production

Sr. No.	**Particulars**	**Per annum/unit Amount (in Rs.)**
(i) (a)	Feed : 3.0 kg per Boar and 3.5 kg. per sow for 365 days @70% kitchen garbage (@Rs.0.75 per kg) and 30% concentrated feed (@ Rs.6.00 kg.) = Rs.64495.50	74,750.00
(b)	Weaner feed cost 6 kg/day @ 0.2 kg. per piglet/day for 240 piglets for 60 days = Rs.17280.00	19,895.00
(c)	Fattener cost (two batches of piglets) 1.5 kg. per fattener pig for 60 days for 120 piglets: 10800 kgs. (70% kitchen garbage and 30% concentrated)	28,865.00
(ii)	Veterinary expenses	2,875.00
(iii)	Insurance	2,875.00
(iv)	Water, miscellaneous, repairs, and transportation expenses etc. @ Rs.700 p.m.	9,660.00
(v)	Interest	6,900.00
(vi)	Depreciation/amortisation of expenses @10% p.a.	5,635.00
(vii)	Salary & wages 2 nos x Rs.1437.5/- [part time]	34,500.00
(viii)	Sustenance allowance for beneficiary	27,600.00
	TOTAL	**2,13,555.00**
C.	**Net profit**	**54,300.00**
D.	**Cash profit**	**59,200.00**

8.0 VIABILITY INDICATORS

Sr. No.	Particulars	Amount
1.	Repayment per annum (period - 5 years)	19,600.00
2.	Return on investment	54%
3.	Debt service coverage ratio	2.55

9.0 KEY ELEMENTS

1) Technical aspects like ratio of Sow and boar ,Selection of breeding stock, Feeding management and Breeding care:
2) Maintaining hygienic conditions in the plant
3) Market linkages

(23)
PROJECT PROFILE
OF 2 – OCTANOL

1.0 INTRODUCTION

2-Octanol is an eight carbon containing secondary octyl alcohol, (also known as Capryl alcohol), or 2-Octyl alcohol, which is mainly obtained as a byproduct of alkali fusion reaction of Castor oil in Sebacic acid manufacturing. It is an oily, refractive, transparent, colorless liquid with an aromatic and somewhat unpleasant odor. The typical physical and chemical properties and specifications of refined 2-Octanol available commercially are summarized in Table below:

Table: Octanol Product Specifications and Properties

Sr. No.	Property/Specification Details	Value
1.	Appearance	Clear Liquid, without any particles
2.	Color, Hazen units, max	50
3.	Specific gravity at 20^0C	0.8193
4.	Acid Value max	0.5
5.	Hydroxyl value	6
6.	Soponification value, min	260
7.	Boiling point^{0}C	178.5
8.	Refractive index at 20^0C	1.42025
	Source: Chemical Weekly	

2.0 PRODUCTS

2-Octanol is synonyms as to Capryl alcohol; methylhexyl carbinol; 1-methyl-1-heptanol, 2-octyl alcohol.

2-Octanol is an important castor oil derivative and is finding numerous applications as mentioned here below:

- 2-Octanol is used for the manufacture of different plasticizers like its sebacates, adipate and phthalates-esters of different types with respective organic acids.
- It is used as an antifoaming agent for urea formaldehyde and poly-vinyl resins.

Study on Castor Oil:

- 2-Octonol is finding application as an organic solvent. Its main use is as solvent in rubber processing industry.
- In coal industry it is used as floating agent. In farming chemical industry also it is used as floating agent and as for producing emulsifier.
- It is finding application in chemical fiber industry as fiber oil.
- It is also used in the manufacture of range of perfumery compounds by forming its esters-butyrates and acetates. It can also be used in the manufacuture of methyl-hexyl ketone by oxidation.

Thus, 2-Octanol has many uses and applications.

3.0 MARKET POTENTIAL

India is having fast growing plastic industry, resins and rubber processing industries and hence this product has potential for manufacturing range of plasticizers and also to use it solvent. 2-Octanol has excellent potential as raw material for the manufacture of range of esters which are used as perfumery chemicals. The estimated global demand of 2-Octanol is approx. 45000 MTPA, and out of this almost 85% is being catered by Sebacic acid manufacturers from China. This global demand is growing at the rate of 3 to 5% per annum and Indian market is growing at 6 to 7% p.a. At present India is not producing sufficient quantity of 2-Octanol required by its consuming industries and hence it is being imported from China by major consuming industries like plasticizers and perfumery chemical manufacturers and also by rubber processors.

Market Sensitivity and Sensitization

2-Octanol is mainly used in the manufacture of plasticizers, in perfumery chemicals and as solvent. 2-Octanol market is affected by the market demand of these consuming industries and many of these end use products are also dependent on their demand on industrial and consumer products in domestic and export markets. Thus, 2-Octanol prices will not fluctuate frequently in normal condition. Since, Castor oil is used as main raw material to manufacture 2-Octanol its price fluctuations and the price fluctuations in the

main produce Sebacic acid in domestic and international markets will also affect the price of 2-Octanol.

Present Industry Status

In India, at present there is very small capacity of Sebacic Acid manufacture and hence 2-Octanol manufacturing capacity is also in proportion to that. A small quantity fo 2-OCtanol is being manufactured using alternate process, but its more economical and viable to recover this product as a by-product of Sebacic Acid manufacture. At present there are only two units of Sebacic acid, which are producing 2-Octanol as by product. The total installed capacity of 2-octanol is India is estimated to be 6500 MTPA considering the present installed capacity of Sebacic Acid in India. However, it is important to note here that about out of this about 1025 MT capacity is currently not operational.

2-Octanol is mainly produced as by-product of Sebacic acid, and at present for large size commercial projects, this technology is brought from China. IICT-Hyderabad is also offering technology for Sebacic Acid and 2-Octanol, but project size offered is commercially not viable. It is suggested to go for proven technology from India or from overseas for this project. Technology for standalone project to manufacture 2-Octanol will be simple and it is considered here to work our project cost for this profile.

4.0 TECHNICAL ASPECTS

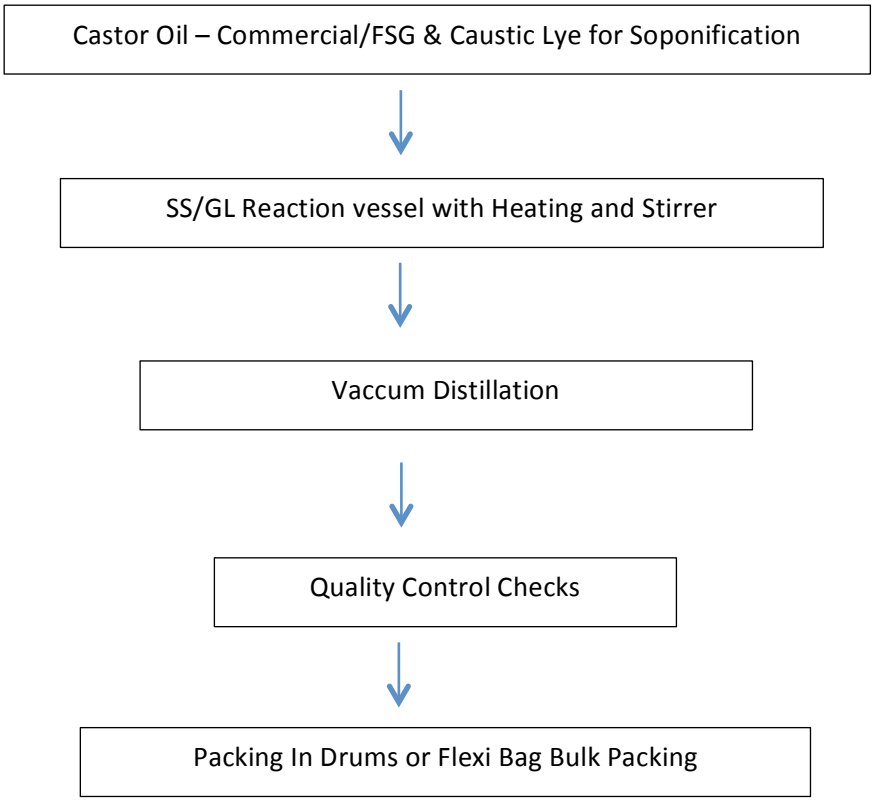
4.1Suggested Capacity and Turnover of Project:

As a standalone project to manufacture 2-Octanol from Castor oil, a unit with 3000 MTPA input capacity is suggested, which will have approx. 1110 MTPA crude 2-Octanol and on refining it will give approx. 1100 MT pure product. The estimated sales turnover from the proposed project will be approx. Rs. 900 lacs per annum.

4.2 Manufacturing Process and Source of Technology:

2-Octanol is mainly produced as a by-product of Sebacic Acid manufacturing process. However, it can also be manufactured by heating Castor oil soap with 30% sodium carbonate. This process besides giving higher yield also gives purer end product eliminating the need of refining it, as required in other process. A typical material flow and manufacturing process are schematically summarized in following figure:

Figure: Material Flow and Manufacturing Process Diagram for 2-Octanol



4.3 Availability of Infrastructure Facilities & Employment Potential.

4.4 Raw Material Requirement and Cost Study of Castor Oil:

As indicated previously the proposed project will have two main raw materials, castor oil and caustic lye for Soponification. In the proposed project, it will have requirement of approx. 3050 MT of castor oil of commercial/FSG quality.

5.0 CAPITAL INPUTS

5.1 Plant and Machineries

The main plant and machineries required for the proposed project, their estimated cost and sources are summarized in below table:

Table: List of Plant and Machineries and Utilities for the Proposed Unit

Sr. No.	Plant & Machinery Particulars	Estimated Cost in Rs. Lacs	Source of Machinery
1.	Castor oil storage tanks MS	3.0	Local Fabrication
2.	Caustic Lye storage tank MS	1.0	Local Fabrication
3.	SS?GL 10MT reaction vessel for Soponification with heating & stirring arrangement.	12.0	Glasscoat Equipment Ltd, Vithal Udyognagar, Anand, Gujarat
4.	SS Distillation colum with vaccum system – Final product	12.0	R. Squar & Company, Ambarnath MIDC, Maharashtra
5.	Thermic Fluid heating system	2.0	Aero-Therm/ Thermax Ltd, Pune
6.	Piping, values, Insulation, etc;	2.5	Local Fabrication
7.	Working Platform and electrical system with controls	**2.5**	Local Fabrication and Electrical Supplier Co.
	Total	35.0	

5.2 Requirement of Utilities

The proposed project will have thermic fluid heating for castor oil; hence there will be any requirement of heating fuel/gas. Another main utility required for the proposed project will be electric power and as per machinery proposed this unit will have connected power load of approx. 70 HP and utilized peak load will be approx. 50 HP.

6.0 TOTAL COST OF PROJECT AND SOURCES OF FINANCE

There will be need to invest in terms of land, land development, building and civil works, plant and machineries, miscellaneous fixed assets etc; in this project. Over and above fixed asset investment, there will be provision of contingencies and preliminary and pre-operative expenses for the proposed project. A fixed project cost of Rs.76.50 lacs has been estimated for the proposed 2-Octanol projects with suggested capacity of 1125

MTPA. This estimate is indicative and may differ with the selection of technology as well as proposed size of the project. Detailed estimate are given in below table:

Table: Estimated Project Cost & Means of Finance

Sr. No.	Cost of Project	Rs. In lacs
1.	Land and Land development 1000 Sq. mt	2.50
2.	Main Buildings 250 Sq. mt.	10.00
3.	Plant & Machinery (4.5 TPD) output	35.00
4.	Miscellaneous Fixed Assets	15.00
5.	Preliminary & Pre-operative	8.00
6.	Provision for Contingencies	4.75
7.	Total Fixed Assets	76.50
8.	Margin Money for working capital	23.50
9.	**Total**	**175.25**
	Means of Finance	
10.	Promoters contribution	52.58
11.	Term Loan Borrowing	122.67
12.	**Total Source of Finance**	**175.25**

The block capital cost of this project including working capital margin is Rs. 100 lacs. The working capital margin is Rs. 23.50 lacs. The proposed project will be using Castor oil as input material and if it is put as an integrated unit it can have status of agro-processing industry. As per present funding norms of financial institutions and banks promoters' margin has been considered at 25% of project cost.

7.0 PROFITABILITY

As observed from above the proposed unit will start making profit from the first year itself, and it will increase with the capacity utilization in subsequent years.

Financial Ratios:

Based on the annual profitability estimates, key financial indicators, Break-even point, DSCR, average DSCR and ROI for the proposed project, for 3 years period have been worked out in table.

Table: Key Financial Indicators for 2-Octanol Project

Sr. No.	Financial Indicators	1st	2nd	3rd
A	Break-even point (%)	37.02	35.47	33.95
B	Debt-service coverage ratio	1.69	2.52	3.53
C	Average DSCR (%)	<---------- 2.58 ---------->		
D	Return on Investment (ROI) (%)	21.62	31.97	42.35

Looking to the estimated financial indicators proposed project for the 2-Octanol will be self-sufficient to generate profits to make it economically viable proposition.

8.0 WORKING CAPTIAL

The proposed project will have working capital requirement of Rs.94 lacs and based on current funding norms of schedule banks considering 25% margin of the promoters, the proposed project will have working capital margin of Rs.23.50 lacs and borrowing of Rs. 70.50 lacs. This requirement is indicative and may change as per funding norms of funding banks/agencies.

9.0 KEY ELEMENTS

1) Availability of castor oil
2) Technology / process parameters particularly during vacuum distillation
3) Export market linkages

(24)

PROJECT PROFILE OF BEATEN RICE

1.0 INTRODUCTION

Beaten rice, popularly known as "Chira" in Meghalaya and other North-Eastern States of India is a staple breakfast diet especially in rural and semi-urban areas. It is a low cost wholesome food with good nutritional value. It can be taken in different forms – raw, fired, with curd and milk and therefore has mass appeal. Its preparations can be made at a short notice and hence it is also a convenient food item.

2.0 PRODUCTS

Beaten rice or chira is made from paddy and is popular in all parts of India. People of all age groups from all sections like it and thus it is a mass consumption item. It is used in households, restaurants, roadside dhabas and other eateries, hostels and so on. Beaten rice can be produced anywhere in the North-East region of the country. This profile is based on its production in Meghalaya.

3.0 MARKET POTENTIAL

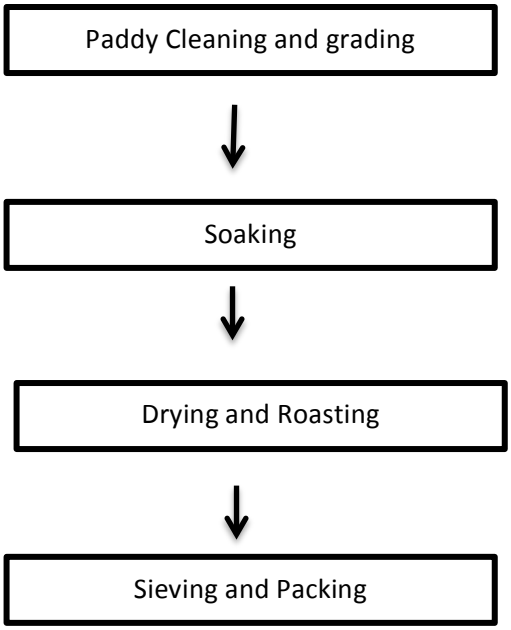
Several easy and quick to make preparations are made from beaten rice. Majority of the Indian households consume it in many forms like raw, fried, with curd or milk or it is also added in some spicy preparations. Since it is made from rice, it is easy to digest with nutritional values. Market for this product in Meghalaya is scattered with rural and semi-urban population having distinct edge over the urban population. Therefore, the market is restricted to local areas and there are no national level brands. Majority of the population of Meghalaya lives in rural or semi-urban areas and hence the project has to be located suitably so that these markets can be easily catered to. This would also ensure easy availability of paddy which is the all-important raw material.

4.0 MANUFACTURING PROCESS

It is conventional and very well established. Paddy is cleaned and graded to remove impurities and then it is soaked in hot water for about 45 minutes. After drying it is roasted to make flakes. These flakes are passed through sieves to remove uneven and unwanted materials and to obtain flakes of fairly even size. Finally, they are packed in polythene bags.

During the process, yield of even sized flakes is around 80%, 10% is wastage and production loss and balance 10% is bran which has market.

The Process Flow Chart is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

An open plot of land of around 250 sq.mtrs. with constructed area of 125 sq.mtrs. can take care of main production hall, storage and packing requirements. Cost of land depending upon exact location may vary, but it is tentatively estimated at Rs. 2,50,000/- whereas cost of construction is assumed to be Rs.4.37 lacs.

5.2 Plant and Machinery

Selection of machinery depends upon the proposed production capacity. It is suggested to install annual production capacity of 500 tons based on 300 working days and working of 2 shifts every day. For this production capacity, following machines are suggested.

(Rs. In lacs)

Item	Qty. (Nos)	Price
Chira Mill with accessories and electric motor (250 Kgs. Capacity)	2	1.08
Electrically-operated Roaster – 48 trays	1	0.90
Husk-fired Furnace	1	0.18
Paddy-soaking Tanks	4	0.48
Sieves	4	0.12
Sealing Machine, Weighing Scale, etc.	1 each	0.18
	Total	**2.94**

5.3 Miscellaneous Assets

A provision of Rs. 40,000/- would take care of working tables, furniture and fixtures, storage facilities etc.

5.4 Utilities

Power requirement shall be 20 HP and daily water consumption is likely to be 750-800 litres.

5.5 Raw Material

The all-important material is paddy of the desired quality. It is grown in ample quantity throughout the State round the year with 2 or 3 crops. But it is advisable to have some firm supply arrangements beforehand to ensure timely and adequate supply. Polythene bags will be required for packing of flakes and then these bags can be packed in new or used gunny bags for bulk supply.

6.0 MANPOWER REQUIREMENTS (increase by 15%)

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Worker	2	2,300	4,600
Semi-skilled Workers	2	1,840	3,680
Helpers	4	1,150	4,600
Salesman	1	2,300	2,300
		Total	**15,180**

6.0 DETAILS OF THE PROPOSED PROJECT

6.1 Land and Building

Land cost- @1000/- per sq.m

Building cost-@3,500/- per sq.m

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Land	250	2,50,000
Building	125	4,37,000
	Total	**6,87,000(approx.6,90,000)**

6.2 Plant and Machinery

As explained in the earlier chapter, the total cost under this head is estimated to be Rs. 2.84 lacs.

6.3 Miscellaneous Assets

A provision of Rs. 40,000/- would take care of other assets as discussed earlier.

7.4 COST OF THE PROJECT AND MEANS OF FINANCING

(Rs. in lacs)

Item	Amount
Land and Building	6.90
Machinery	2.94
Miscellaneous Assets **(increase by 10%)**	0.44
P&P Expenses **(increase by 10%)**	0.44
Contingencies @ 10% on Land & Building and Plant & Machinery	0.97
Working Capital Margin **(increase by 20%)**	1.62
Total	**13.31**
Means of Finance	
Promoters' Contribution	3.99
Loan from Bank/FI	9.32
Total	**13.3**
Debt Equity Ratio	2.16:1
Promoters' Contribution	31%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

7.0 PROFITABILITY CALCULATIONS

7.1 Production Capacity and Build-up

The rated production capacity of the project is 200 tonnes every year whereas actual capacity utilisation in the first year is taken at 60% and second year onwards, it is restricted to 75%.

7.2 Sales Revenue at 100%(increase by 20%)

(Rs in lacs)

Product	Qty. (Tonnes)	Selling Price/ Ton (Rs)	Sales
Beaten Rice	160	34,500	55.20
Rice Bran	20	3,450	0.69
		Total	**55.89 OR 56.00**

7.3 Raw Materials Required at 100%(increase by 15%)

(Rs in lacs)

Product	Qty. (Tonnes)	Rate per Ton (Rs)	Value
Paddy	200	30000	60.00
Packing Materials	--	--	0.86
		Total	**60.86**

9.0 KEY ELEMENTS

1) Availability and quality of paddy
2) Minimising wastage to increase profitability

(25)

PROJECT PROFILE
OF
CANNED BAMBOO SHOOTS

1.0 INTRODUCTION

Bamboos are grown in large quantities in many of the North-Eastern states including Meghalaya but the available resources are yet to be commercially utilised. Main use is in making houses and mats and baskets. There are many reserved, protected or unclassified forests with huge production of bamboos especially along the low altitude hilly areas where the rainfall is high. Nagaland is not an exception with abundant availability of bamboos. Bamboo shoots are considered as a delicacy in Meghalaya and are eaten regularly round the year.

2.0 PRODUCTS

Tender bamboo shoots are used in many down the line food preparations and are consumed regularly by many households. The project has to be located in Meghalaya.

3.0 MARKET POTENTIAL

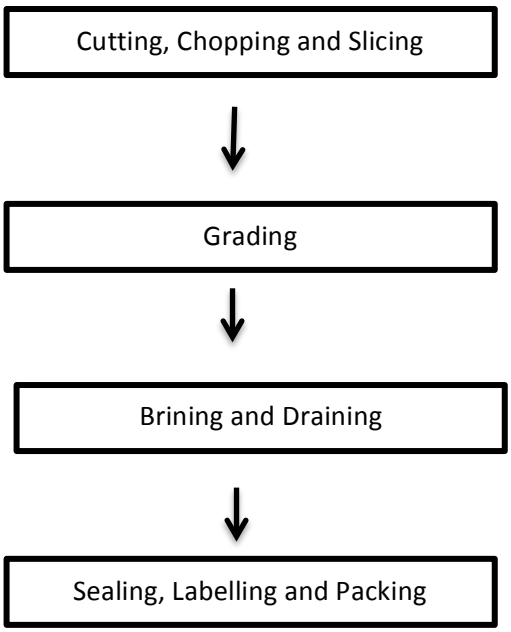
Bamboo shoots are a favourite amongst the regional people of Meghalaya and many delicacies are made from them. There is a ready market as there are very few processing units whereas demand is increasing. Bamboo shoots processed under hygienic conditions have very good market. Apart from individual households, restaurants, caterers, other eateries etc. also require them in large quantities. Product can be sold through provision stores and super markets in consumer packs and to bulk buyers in large packing. Placement of the product at strategic outlets and publicity in local media would boost sales.

4.0 MANUFACTURING PROCESS

Fresh bamboo shoots are cut from head and tail and then chopped and sliced. After grading of pieces they are boiled (brining) and drained and then canned. Salt solution is added in these cans and then it is allowed to evaporate. After that cans are sealed and are processed through retort at a temperature of 100-120° C. After cooling of cans they are labelled and

packed. Canning and retorting are critical processes. The input output ratio is 100:85. Process time is around 2 days.

The Process Flow Chart is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

Land requirement will be 200 sq.mtrs. which would cost around Rs. 2,00,000/-. Requirement of built-up area would be around 75 sq.mtrs. for main factory building including packing and store area whereas balance 25 sq.mtrs. would occupy space for cutting, chopping, grading and washing of bamboo shoots. This space would have two water tanks of around 500 ltrs. capacity. The average cost of construction is taken as Rs. 3,500/- per sq.mtr. The total cost of civil work would be Rs.5.50 lacs.

5.2 Plant and Machinery

The total cost of machinery would be Rs.4.20 lacs which would include boiling vessels, oil fired furnace with burners, canning machine, flanger, evaporation boxes, retort and weighing scales. With the help of this set of machines the annual processing capacity would be 180 tonnes per shift.

Canning facilities can be utilised for canning fruits and vegetables during lean season when bamboo shoots will not be available in sufficient quantity. This would give a further boost to profitability.

5.3 Miscellaneous Assets

Some other assets like furniture & fixtures, cutting knives, plastic baskets, packing tables, storage racks etc. shall be required for which a provision of Rs. 50,000/- is sufficient.

5.4 Utilities

Power requirement shall be 15 HP whereas per day water requirement would be 700-850 ltrs. Furnace oil of around 50-60 ltrs.will be required every day.

5.5 Raw Material

The most important raw material will be bamboo shoots. Availability will not be a problem as there are many bamboo forests in the entire North-East region including Meghalaya. In any case, the annual requirement even at rated capacity will not be more than 180 tonnes and there will not be any difficulty in procurement. Salt requirement will not be much. Tin cans will be required in large quantity depending upon packing size for which prior arrangements are required. Likewise corrugated boxes will be required for final outer packing.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Plant Operators	2	3,450	6,900
Skilled Workers	4	2,287.5	9,150
Helpers	6	1,437.5	8,625
Salesman	1	2,875	2,875
		Total	**27,550**

7.0 DETAILS OF THE PROPOSED PROJECT

7.1 Land and Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Land	200	2,00,000
Building	100	3,50,000
	Total	**5,50,000**

7.2 Machinery

As spelt out earlier, the total cost of machinery will be Rs.4.20 lacs.

7.3 Miscellaneous Assets

A Provision of Rs. 50,000/- is sufficient under this head as discussed before.

7.4 Cost of the Project and Means of Financing

(Rs. In lacs)

Item	Amount
Land and Building	5.50
Machinery	4.20
Miscellaneous Assets	0.55
P&P Expenses	0.82
Contingencies @ 10% on Land and Building & Plant & Machinery	0.97
Working Capital Margin	1.40
Total	**13.44**
Means of Finance	
Promoters' Contribution	4.03
Term Loan from Bank/FI	9.41
Total	**13.44**
Debt Equity Ratio	2.15 : 1
Promoters' Contribution	31%

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build-up

The rated capacity of the plant would be 180 tonnes per year whereas actual utilisation in the first year will be 60% and thereafter 75%.

8.2 Sales Revenue at 100%

Considering average selling price of Rs.36/- per kg; annual sales realisation at 100% activity or 150 tonnes would be Rs.54.00 lacs.

8.3 Raw Materials Required at 100%

(Rs. In lacs)

Product	Qty. (Tons)	Rate (Rs./Ton)	Value
Bamboo Shoots	180	5,750	10.35
Salt	30	3,450	1.03
Tin cans, corrugated boxes, labels, etc.	@ Rs.8,000/- per Ton of finished goods	--	12.40
		Total	**23.78**

9.0 KEY ELEMENTS

- Canning and retorting are critical processes
- Market linkages

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PROJECT PROFILE
OF
CHILLI PICKLES

1.0 INTRODUCTION

Pickles are very popular across the country and they are regularly consumed by almost all households. Restaurants, dhabas, caterers etc. are bulk consumers. There are many varieties of pickles with certain regional specialities as well. They are generally spicy but some are sweet also. They are table enrichers. Meghalaya is not an exception to this national phenomenon with chilly pickles consumed in substantial quantity by people from all walks of life. Khasi and Ribhoi districts in Meghalaya produce more than 1000 tonnes of green chillies every year.

2.0 PRODUCTS

2.1 Applications

Pickles are important part of the Indian cuisine and are eaten along with main course as well as many food preparations and snacks. They are used as taste enrichers. Chilly pickles are popular across the board and are consumed round the year. It can be made anywhere in the country including the North-East region.

2.2 Availability of Know-how and Compliances

CFTRI, Mysore, has successfully developed the technology. Compliance with FPO is mandatory.

3.0 MARKET POTENTIAL

There is a large market for chilly pickles not only in Meghalaya but also in nearby North Eastern states. Chillies are grown in large quantity especially in Ribhoi & Khasi district. Chilly pickles could be of different varieties and at times some other ingredients can also be added. The key element would be to know the regional likings and preferences in terms of taste and making some changes periodically to provide novelty to the consumers. It is a mass consumption item and with proper quality, sales network and publicity, it is possible even for a new entrant to capture the market.

4.0 MANUFACTURING PROCESS

The process is standardised and very well established. Green chillies are washed in water and then dried under the sun-light. After cutting the top and bottom portion, they are cured in brine solution for 2½ to 3 days. After that, oil, turmeric powder and other suitable ingredients (depending upon local palate) are added and mixed thoroughly and then pickle is packed in bottles and plastic pouches. CFTRI, Mysore, has developed process know-how for pickles.

5.0 CAPITAL INPUTS

5.1 Land and Building

A readymade shed or room of around 45-50 sq.mtrs.should be bought to minimise capital cost and save time. The total cost could be Rs. 1.50 lac. Main processing area would require around 25 sq.mtrs. whereas balance space could be utilised for storage and packing.

5.2 Plant and Machinery

Most of the operations are manual. Equipments like pickle storage tanks, stainless steel utensils, food grade plastic jars, bottle capping machine, mixer grinders and weighing scales shall be required. The total cost could be Rs.72,000/-. Production capacity shall be dictated by the market. It can be easily increased even at a short notice. Hence, a moderate capacity of 20 tonnes per year, with 8-10 hours' work every day, with 300 working days is suggested. All the machines shall be available from local traders.

5.3 Miscellaneous Assets

Some other assets like cutters, furniture & fixtures, storage racks, packing tables etc. shall be required for which a provision of Rs. 27,500/- is adequate.

5.4 Utilities

Power requirement will not be much and normal domestic connection is sufficient. Water requirement will be around 600 ltrs. every day.

5.5 Raw and Packing Material

The all-important raw material will be fresh green chillies. They are cultivated in large quantities in many parts of the North-East including Meghalaya. The actual requirement during the year will not be more than 20 tonnes and procurement will not be a problem.

Other materials like edible oil, salt, lemon, turmeric powder etc. shall be available from local market. Plastic or glass bottles and plastic bags would form inner packing and second hand corrugated boxes would be outer packing.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Skilled Worker	1	2,250	2,250
Helpers	2	1,250	2,500
Salesman	1	2,500	2,500
		Total	**7,250**

8.0 DETAILS OF THE PROPOSED PROJECT

7.1 Land and Building

A readymade constructed area of about 50 sq.mtrs. is sufficient as discussed earlier.

7.2 Plant and Machinery

Total cost of machinery to produce 20 tonnes of chilly pickles per year would be Rs. 72,000/- as explained earlier.

7.3 Miscellaneous Assets

A provision of Rs.25,000/- is adequate for the required assets as mentioned before.

7.4 Cost of the Project and Means of Financing

(Rs. In lacs)

Item	Amount
Building	1.50
Machinery	0.72
Miscellaneous Assets	0.27
P&P Expenses	0.44
Contingencies	0.22
Working Capital Margin	0.30
Total	**3.45**
Means of Finance	
Promoters' Contribution	1.03
Term Loan from Bank/FI	2.42
Total	**3.45**
Debt Equity Ratio	2.47 : 1
Promoters' Contribution	36%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build-up

As against the rated capacity of 20 tonnes, actual utilisation is expected to be 60% in the first year and 75% thereafter.

8.2 Sales Revenue at 100%

Considering selling price of Rs. 75,000/- per ton, sales income at 100% will be Rs. 18.00 lacs.

8.3 Raw Materials Required at 100%

(Rs. In lacs)

Product	Qty. (Tons)	Price/Ton (Rs.)	Value
Green Chillies	20	20,125	4.02
Edible Oil	2	60,000	1.38
Salt, Turmeric Powder, Lemon etc.	--	--	0.60
Packing Materials like glass/plastic bottles, polythene bags, lables, corrugated boxes etc.	--	--	2.00
		Total	**8.00**

9.0 KEY ELEMENTS

- Availability and quality of important raw material fresh green chillies
- Marinating right balance of taste as per market requirement
- Packaging

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PROJECT PROFILE
OF
FISH MEAL

1.0 INTRODUCTION

Fish meal is a valuable feeding material with high contents of digestible vitamins, minerals and proteins. Fish meal is given as supplementary food to increase production of meat or eggs. By mixing in the correct proportion in compound feeds, fish meal is considered as an important poultry feed. Since the diet of domestic and poultry animals is often deficient in proteins and vitamins, fish meal has become very popular as it provides important nutrients and fills the gap. The CFTRI, Mysore has developed and standardised the process for manufacture of fish meal and the prospective entrepreneurs may like to approach the Institute. This note considers Meghalaya as the preferred location.

2.0 PRODUCTS

2.1 Applications

Fish meal is an important poultry feed generally made from fish which cannot be economically utilised, fish not suitable for human consumption or fish wastes like trimmings, heads and so on and also wastes from fish canning and freezing factories. It provides digestible vitamins, minerals and proteins resulting in increased production of eggs and meat.

2.2 Availability of know-how, Quality Standards and Compliances

CFTRI, Mysore, has successfully developed the technical know-how. BIS has specified quality standards vide IS 4307:1967. Compliance under the PFA Act is mandatory.

3.0 MARKET POTENTIAL

Demand for fish meal is increasing since it is an important animal feed. Many govt. and other agencies are promoting eggs as a vegetarian food and special incentives are offered to poultry farming. Changing lifestyles and increase in disposable incomes have witnessed constant increase in consumption of eggs and chicken. This has in turn, given boost to poultry farming. This augurs well for the fish meal industry. There are some organised sector units producing fish meal but there is a good scope for small scale units as they can

offer competitive prices. It is necessary that the factory is located at a place where raw materials are easily available round the year e.g. near coastal area or nearer to a large fish canning and freezing factory.

4.0 MANUFACTURING PROCESS

There are two important types of fish viz. fatty and non-fatty fish. In case of non-fatty fish and fish wastes, the material is fed to the drier wherein the process of cooking and drying is carried out with steam pressure of 10 to 15 p.s.i.g. in the jacket of the drier. Drying takes around 6 to 8 hours as the moisture content has to be 10%. This dried material is then pulverised and sieved to segregate large particles and then packed in jute bags with plastic liner. As regards fatty fish, the material is cooked in open pan cooker and then it is pressed under screwed press to remove water. Cakes thus obtained are dried as per the process adopted for non-fatty fish. The yield is around 40%.

5.0 CAPITAL INPUTS

5.1 Land and Building

A readymade shed of about 125 sq.mtrs. is sufficient to accommodate machines leaving adequate space for storage and packing. Cost of such shed is assumed to be Rs.3.90 lacs.

5.2 Plant and Machinery

The main determinant for rated production capacity would be availability of fish. But the processing capacity has to be 15 tonnes per month or 180 tonnes per year on 2 shift working basis. This would need following machinery.

Item	Qty.	Price (Rs)
Rotary drum dryer made from 6 mm mild steel plates for inner shelf and 5 mm for outer shelf with 76 mm steam jacket complete with electric motor and accessories	1	4,20,000
Electrically-operated Mini Boiler	1	90,000
Hammer type pulveriser complete with electric motor	1	96,000
Steam-jacketted cooking vessel	1	30,000
Screwed Press	1	24,000
Underground and overhead water tanks	--	70,000
	Total	**7,30,000**

5.3 Miscellaneous Assets

A provision of Rs.55,000/- would take care of other assets like furniture & fixtures, packing tables, storage racks, plastic tubs, exhaust fans etc.

5.4 Utilities

Power requirement shall be 60 HP whereas per day water requirement will be around 3000 lts.

5.5 Raw Material

The only raw material required would be fish waste and fish which is unfit for human consumption. It is necessary to ensure smooth, adequate and continuous supply while finalizing the location. Gunny bags with inner plastic liner will be the packing material.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs)	Total Monthly Salary (Rs)
Machine Operators	2	3,450	6,900
Semi-skilled Workers	2	2012.5	4,025
Unskilled Workers	4	1,437.5	5,750
Salesman	1	2,875	2,875
		Total	**19,550**

7.0 DETAILS OF THE PROPOSED PROJECT

7.1 Building

A readymade shed of around 125 sq.mtrs. is adequate as explained before.

7.2 Machinery

An expenditure of Rs. 7.20 lacs is estimated on the required machines as discussed earlier.

7.3Miscellaneous Assets

As estimated expenditure under this head is Rs. 55,000/- as narrated before.

7.5 Cost of the Project and Means of Financing

(Rs. In lacs)

Item	Amount
Building	3.90
Machinery	7.30
Miscellaneous Assets	0.55
P&P Expenses	0.66
Contingencies @ 10% on Building & Plant & Machinery	1.12
Working Capital Margin	0.92
Total	**14.45**
Means of Finance	
Promoters' Contribution	4.34
Term Loan from Bank/FI	10.11
Total	**14.45**
Debt Equity Ratio	2.33 : 1
Promoters' Contribution	30%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity and Build-up

As against the installed rated capacity of 180 tonnes per year, actual utilisation in the first year is taken at 60% and thereafter it is limited to 75%.

8.2 Sales Revenue at 100%

Considering yield of 40% and selling price of Rs. 54,000/- per ton, sales revenue of 72 tonnes comes to Rs. 38.88 lacs.

8.3 Raw Materials Required at 100%

(Rs. In lacs)

Product	Qty. (Tons)	Price/Ton (Rs.)	Value
Fish Waste and Fish	180	9200	16.56
Packing Material @ 400/Ton of Finished Goods	--	--	0.30
		Total	**16.86**

9.0 KEY ELEMENTS

- Technology from CFTRI, Mysore
- Separate process parameter for processing fatty and non-fatty fish
- Linkages for bulk market

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PROJECT PROFILE
OF
TAMARIND POWDER

1.0 INTRODUCTION & PRODUCT

Tamarind is a commonly used condiment in daily culinary practices. It is used in the preparation of sambar, rasams, soups, gravies, modified rice preparations, sweet sour sauce etc. With the increasing use of tamarind in food preparations, ready to use tamarind powder has found a market place. This is because it has a lesser fibre content, is ready to use directly in preparations and is not cumbersome or messy to use. It is for this reason that the product finds acceptance among house wives in North East India in general and Meghalaya in particular.

2.0 MARKET POTENTIAL

The market for the product is there in the states of North East India, and is consumed by specific ethnic groups. The product finds placement in A class cities out lets, self-service counters and departmental stores. Very few B class retail outlets stack the product. Being easy to use and non-messy during cooking, it enjoys a very good export potential.

3.0 MANUFACTURING PROCESS

The production process comprises of first cleaning the tamarind fruit to remove the seeds and adhering dirt. The fibre is removed to the maximum extent possible. The pulp is then shredded in the shredder. It is then dried and mixed with starch to a maximum extent of 20% and then mix ground in a pin mill to form a coarse powder like mass. The material is then packed in pouches and cartons before distribution.

4.0 CAPTIAL INPUTS

Capacity	480000 Kgs per annum
Selling price	Rs. Rs.51 per kg.

4.1 Project Cost/Capital Investment

Sr. No.	Description	Amount (Rs.)
1.	Fixed Capital	700000
2.	Working Capital for 1 month	200000
	Total Project Cost	**900000**

4.2 Means of Finance

Sr. No.	Description	%age	Amount (Rs.)
1.	Promoter contribution	30%	270000
2	Term loan	70%	630000
	Total		**900000**

5.0 COST OF PROJECT

5.1 Fixed Capital

a. Land and Building Rented 3000 per month

b. Machinery & Equipment

Sr. No.	Description	Qty.	Rate	Amount (Rs.)
1.	Stainless Steel tanks	4	4800	19200
2.	Shredder Nos	1	144000	144000
3.	Pin mill for grinding Nos	1	450000	450000
4.	Tray drier with 32 trays Nos	1	72000	72000
5.	Pedal selling machine Nos	1	18000	18000
	Total			703200 Say 700000

6.0 MANPOWER

Sr. No.	Description	No.	Salary	Amount (Rs)
1.	Supervisor/Entrepreneur	1	2875	2875
2.	Skilled workers	10	2300	23000
3.	Workers	8	1380	11040
4.	Other staff	5	1150	5750
	Total			**42665**

6.1 Raw Material (per month)

Sr. No.	Description	Unit	Qty.	Rate	Amount (Rs)
1.	Tamarind	Kgs	40000	19.55	782000
2.	Starch	Kgs	10000	16.1	161000
3.	Begard box		227250	3.45	784012.5
4.	Secondary cartons		4040	17.25	69690
	Total				**1796702.5 ~1796705**

6.2 Utilities (per month)

Sr. No.	Description	Unit	Amount (Rs)
1.	Power	LS	16500
2.	Water	LS	2200

TURNOVER (Per year)

Sr. No.	Description	Unit	Qty.	Rate Rs.	Amount (Rs.)
1.		Kgs per annum	480000	52.8	25344000
	Total				**25344000**

7.0 PROFIT ANALYSIS & RATIOS

Sr. No.	Description	Amount (Rs.)
1	Percentage of Profit on Sales	8%
2	Percentage of Return on Investment	24%

8.0 KEY ELEMENTS

- Food habits of people in Meghalaya and nearby areas
- Quality of key raw material-with less fibre

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PROJECT PROFILE
OF
BETEL NUTS

1.0 INTRODUCTION

Betel nuts are consumed in large quantities across the country. Meghalaya also is one such state. It is a typical Indian habit and they are eaten by many purely as an addiction whereas some consume it assuming that it helps the digestive system. Apart from this segment, there is a very large market of pan shops literally scattered across the length and breadth of the country. Since last few years, many varieties of betel nuts and other mints and mouth fresheners are introduced in the market. Consumption of plain betel nuts is being replaced by flavoured varieties of betel nuts and many pan shops also use it while making special pans. It is a working capital oriented activity requiring adequate funds.

2.0 PRODUCT

Consumption of betel nuts is very common in India but over a period of time, plain betel nuts are replaced by flavoured varieties sold in small pouches. Many people eat it out of sheer habit whereas some eat it to stop tobacco addiction. But its consumption is increasing.

2.1 Compliance with PFA Act is necessary.

3.0 MARKET POTENTIAL

3.1 Demand and Supply:

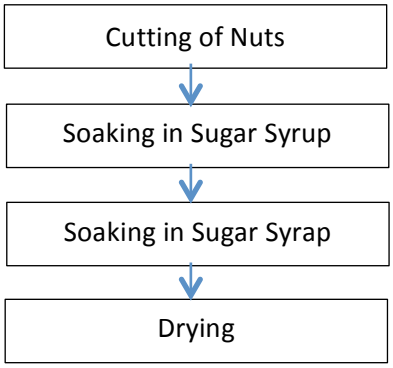
Betel nuts in plain and other forms are consumed in the country since centuries. People in Meghalaya have habit of consuming betel nut frequently and there is significant consumption and hence demand. With the passage of time, many new varieties and flavours are introduced and being sold in huge quantities all over the country. Attractively packed pouches are available in the market like plain, sweet, mentholated, mixed with dry fruit and so on.

3.2 Marketing Strategy:

There are some big and established companies as well as many regional players in the market and most of them are doing fairly well. Key to success is adequate advertisement budget, proper and adequate placement, affordable price and lucrative discounts to retailers. The product is sold in cities, towns, rural areas, highways, bus-stands and railway stations, picnic spots, theatres and many such places mainly through cigarette and pan shops/vendors.

4.0 MANUFACTURING PROCESS

Betel nuts or areca nuts are cut into small pieces with the help of shredder and are soaked in sugar syrup for 72 hours and then syrup is drained. Same process is repeated for additional 24 hours. Then these pieces are dried in the drying chamber and suitably packed. To make mentholated betel nuts, they are cut into small pieces and then are mixed with paste made of menthol, cloves, cardamom and edible oil for about 72 hours. Then they are dried in a dryer and packed. The process flow chart is as under.



5.0 CAPTIAL INPUTS

5.1 Land and Building

Total built up area requirement is about 150 sq.mtrs. and hence land requirement is around 250 sq.mtrs. Land may cost Rs.1.00 lac whereas construction cost would be approximately Rs.3.75 lacs. Main production hall would require 75 sq.mtrs. whereas packing room about 25 sq.mtrs. Balance area can be utilised for storage and a small office.

5.2 Plant and Machinery

Market is very vast but there is a competition as well. Further, it is a working capital oriented activity. Hence, the promoters must be financially sound. Production capacity of 30,000 kgs.per year on single shift working basis is suggested with 300 working days per year. Working hours can always be increased. This would require following machinery.

(Rs. In lacs)

Sr. No.	Item	Qty	Amount
1.	SS Soaking Tanks	6	1.44
2.	Shredder Knives	25	0.14
3.	Mixer Grinder- 20Kgs/Hr capacity	1	0.30
4.	Nut-cracker	1	0.42
5.	Tray Dryers with 48 trays	2	5.16
6.	Form, Fill and Seal Machines	2	3.60
7.	Delivery Vehicle	1	2.10
8.	Gas-fired Furnace with Burners	1	0.30
9.	**Total**		13.46

5.3 Miscellaneous Assets

Number of other assets like plastic tubs, furniture & fixtures, working tables, storage racks, weighing scale etc. shall be required costing about Rs. 66,000/-.

5.4 Utilities

Power requirement shall be 30 HP whereas water required for washing areca nuts and for potable and sanitation purposes will be 1000 ltrs. per day. 5 LPG cylinders shall be required every month. In other words, annual cost of utilities at 100% would be Rs.1.32 lac.

5.5 Raw Materials

The all-important raw material will be fully grown, good quality areca nuts. Even at 100% utilisation, their annual requirement will not be more than 27 tonnes and hence no difficulty is envisaged in procurement. Other materials like sugar, edible oil, cloves, menthol, cardamom etc. shall be required in small quantity and availability will not be a problem. Main packing material will be pouches/ sachets rolls with colourful design and good quality printing. Adequate prior arrangements are advisable. Outer packing shall be of corrugated boxes.

6.0 MANPOWER

Sr. No.	Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
1.	Skilled workers	2	2,587.5	5,175
2.	Semi-skilled workers	2	1,897.8	3,795.6
3.	Helpers	4	1,437.5	5,750
4.	Driver	1	2,300	2,300
5.	Salesman	1	2,875	2,875
	Total			19,895.6 ~19,900

7.0 COST OF PROJECT & MEANS OF FINANCE

7.1 Land and Building

Sr. No.	Particulars	Area (Sq. Mtrs)	Cost (Rs.)
1.	Land	250	2,50,000
2.	Building	350	12,25,000
3.	**Total**		**14,75,000**

7.2 Machinery

As discussed earlier in detail, the total cost of machinery is estimated to Rs. 13.46 lacs.

7.3 Miscellaneous Assets

As spelt out before, a provision of Rs.66,000/- under this head is adequate.

7.4 Preliminary & Pre-operative Expenses

There will be many expenses under this head like market survey expenses, registration, establishment and administrative expenses, travelling, interest during implementation, trial run expenses and so on. A provision of Rs. 1.00 lac is to be made towards these.

7.5 Working Capital Requirement

The project would require following working funds during first year at 60% capacity utilisation.

(Rs. In lacs)

Sr. No.	Particulars	Period	Margin	Total	Bank	Promoters
1.	Stock of Raw & Packing Materials	½ Month	30%	1.65	1.15	0.50
2.	Stock of Work in Progress	½ Month	30%	1.20	0.85	0.35
3.	Stock of finished goods	½ Month	25%	2.80	2.10	0.70
4.	Receivables	½ Month	25%	3.00	2.25	0.75
5.	Working expenses	1 Month	100%	0.60	--	0.60
	Total			**9.25**	**6.35**	**2.90**

7.6 Cost of the Project & Means of Financing

(Rs. In lacs)

Sr. No.	Item	Amount
1.	Land and Building	14.75
2.	Plant and Machinery	13.46
3.	Miscellaneous Assets	0.66
4.	P&P Expenses	1.10
5.	Contingencies @ 10% on Land and Building & Plant & Machinery	2.82
6.	Working Capital Margin	2.90
7.	**Total**	35.69 Say 36.00
8.	**Means of Finance**	
9.	Promoters' Contribution	10.80
10.	Term Loan from Bank/FI	25.20
11.	**Total**	35.69
12.	Debt Equity Ratio	2.30:1
13.	Promoters' Contribution	30%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity & Build-up

As against the annual rated capacity of 30 tonnes, actual utilisation in the 1st year is taken at 60% and thereafter it is restricted to 75%.

8.2 Sales Revenue at 100%

Each sachet would contain 7.5 gms. which would be sold @ Rs.3.60. Hence sales value of 30 tonnes would be Rs. 144.00 lacs.

8.3 Raw and Packing Materials Required at 100%

(Rs. In lacs)

Sr. No.	Product	Qty (tonnes)	Price/Ton (Rs.)	Value
1.	Areca nuts	27	2,53,000	68.31
2.	Sugar	2.5	19,550	0.48
3.	Edible Oil	0.5	57,500	0.28
4.	Cloves, Menthol, Cardamom, etc.	2	2,87,500	5.75
5.	Packing Materials	@ 15 paisa per sachet for 42 lac sachets		7.24
6.	**Total**			**82.06**

8.4 Return over Investment

Considering various expenses and sales revenue, Return over Investment (RoI) is estimated @ 18%

8.00 KEY ELEMENTS

- Beetle nut eating habit of people in Meghalaya
- Adequate working capital

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PROJECT PROFILE
OF
CASHEW PROCESSING

1.0 INTRODUCTION

Cashews are cultivated mainly in Kerala, Maharashtra and Goa. At the same time Meghalaya also has significant cultivation and production of cashew nuts. Cashew processing however is yet to pick up in Meghalaya. Most of the cashew processing is undertaken manually. Thus, cashew processing has good potential in the Meghalaya and nearby region.

2.0 PRODUCT

2.1 Applications

Cashews form an integral part of dry fruits and are used in many preparations since long. Raw cashews (cashews with kernels or shells) are plucked from plants and then they are processed and kernels are removed so that table variety can be obtained.

2.2 Compliance with the provisions of the PFA Act is required.

3.0 MARKET POTENTIAL

3.1 Demand and Supply:

Cashews are high value dry fruits. Their shelf-life is 4 to 6 months if processed properly or else they develop fungus or taste bitter. They are used in many sweet preparations, certain farsan items, dessert preparations and ice-creams. They are also used as table enrichers in some exclusive restaurants and star hotels. Due to their high price, their regular domestic use is limited to few elite families.

3.2 Marketing Strategy:

Market for cashews is gradually increasing whereas its supply is limited. Cashew plants require a very special climate and hence they are grown in Meghalaya region. Thus, demand for cashews is increasing and there are fluctuations in prices according to the supplies.

4.0 MANUFACTURING PROCESS

The process of manufacture is well-established. Cashew fruits are dried under sun and then they are boiled to remove all impurities and to facilitate removal of shell. Subsequently, they are dried in a dryer and then cracked to remove shell and take out cashews. They are once again dried and outer reddish skin is removed to obtain the table variety. Actual recovery of table variety is around 30% whereas 50% account for shell and remaining 20% is process loss. Cashew shells have market as they are used in cattle feed.

5.0 CAPTIAL INPUTS

5.1 Land and Building

A plot of land of around 250 sq.mtrs. with built-up area of 100 sq.mtrs will be sufficient. Main processing area would require around 55-60 sq.mtrs. whereas storage and packing rooms would occupy balance area. The total cost of building is estimated to be Rs. 3.50 lacs whereas that of land around Rs.2,50, 000/-.

5.2 Plant and Machinery

This is a seasonal business and the factory would work for about 200 days every year. Keeping in mind the availability of raw materials and market prospects, processing capacity of 50 tonnes per season is suggested. This would require following equipments:

(Rs. In lacs)

Sr. No.	Item	Qty	Amount
1.	Electrically-operated Boiler	1	1,08,000
2.	Tray-drier- 24 Trays	1	72,000
3.	Cutters	10	12,000
4.	Weighing Scales	2	18,000
5.	Automatic Sealing Machines	2	12,000
6.	**Total**		2,22,000

5.3 Miscellaneous Assets

Some other assets like furniture & fixtures, fruit crates, SS utensils, storage racks, working tables etc. shall be required for which a provision of Rs. 60,000/- is made.

5.4 Utilities

Total power requirement will be 20 HP whereas water required for washing of cashew fruits and sanitation and potable purposes will be 700-800 ltrs. per day. Per season cost at 100% utilisation is likely to be Rs. 66,000/-.

5.5 Raw Materials

The only raw material required will be cashew fruits. They are grown in large quantities in Meghalaya. Hence, obtaining around 50 tonnes of cashew fruits per season even at 100% capacity utilisation will not pose any problem. Packing materials like polythene bags and second-hand corrugated boxes shall be available locally.

6.0 MANPOWER

Sr. No.	Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
1.	Skilled workers	2	2,587.5	5,175
2.	Helpers	4	1,437.5	5,750
3.	Salesman	1	2,875	2,875
	Total			13,800

7.0 COST OF PROJECT & MEANS OF FINANCE

7.1 Land and Building

Sr. No.	Particulars	Area (Sq. Mtrs)	Cost (Rs.)
1.	Land	250	2,50,000
2.	Building	100	3,50,000
3.	**Total**		**6,00,000**

7.2 Machinery

As explained earlier, the total expenditure under this head is expected to be Rs. 2.22 lacs.

7.3 Miscellaneous Assets

A provision of Rs. 0.60 lac is enough as explained earlier.

7.4 Preliminary & Pre-operative Expenses

There will be many pre-production expenses like establishment, legal & administrative charges, travelling, interest during implementation, trial run expenses and so on. A provision of Rs. 57,500/- is made towards them.

7.5 Cost of the Project & Means of Financing

(Rs. In lacs)

Sr. No.	Item	Amount
1.	Land & Building	6.00
2.	Machinery	2.22
3.	Miscellaneous Assets	0.66
4.	P&P Expenses	0.55
5.	Contingencies @ 10% on Building and Machinery	0.82
6.	Working Capital Margin	0.70
7.	**Total**	10.96 Say 11.00
8.	**Means of Finance**	
9.	Promoters' Contribution	3.30
10.	Term Loan from Bank/FI	7.70
11.	**Total**	11.00
12.	Debt Equity Ratio	2.55:1
13.	Promoters' Contribution	30%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity & Build-up

As against the processing capacity of 50 tonnes, the actual utilisation in the first year will be 60% and second year onwards it will be 75%.

8.2 Sales Revenue at 100%

(Rs. In lacs)

Sr. No.	Product	Qty (tonnes)	Selling Price (Rs.)	Sales
1.	Processed Cashew	15	2,50,000	37.50
2.	Cashew Shells	25	6,000	1.50
3.	**Total**			**39.00**

8.3 Raw and Packing Materials Required at 100%

(Rs. In lacs)

Sr. No.	Product	Qty (tonnes)	Rate per Ton.	Value
1.	Raw Cashew	50	65,000	32.50
2.	Packing Materials	--	--	0.50
3.	**Total**			**33.00**

8.4 Return over Investment (RoI)

Considering various cost against the sales income, Return over Investment (RoI) is estimated@ 22% approximately.

9.00 KEY ELEMENTS

- Availability of cashew nuts of required quality in Meghalaya
- Market linkages

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PROJECT PROFILE
OF
REPAIR AND SERVICE CENTRE
FOR CONSUMER ELECTRONICS AND TELECOMMUNICATION EQUIPMENT

1.0 INTRODUCTION & PRODUCT

With the advancement of technology, varieties of consumer electronic products with a lot of features are being introduced in the market every day and more and more multinational companies are also entering this field. In general, the responsibility to provide after sales service rests with the supplier/ manufacturer. However, adequate facilities are not available in many remote areas of the country for the servicing of consumer electronic products. This scheme gives information for setting up of a unit for the repairs of TVs, audio systems, Radios, Stereo Amplifiers, power supply systems, emergency lights, telephones and other miscellaneous consumer electronic/ instruments items.

2.0 MARKET POTENTIAL

Consumer electronic industry constitutes the largest part of the electronics hardware sector accounting almost 38% of the total electronic production during the year 2012- 13. New models of TVs, CD Players, VCD layers and other consumer electronic products are coming to the market regularly. Now the consumer electronic technology has changed the society to such an extent that there is no house even in the remote areas without an electronic entertainment product like radio, TV, audio system, etc. This applies to North East States in general and Meghalaya in particular.

These products go out of order due to various reasons like fluctuations in the electric power, improper handling, negligence in use, failure of the components etc. The service facilities offered by most of the manufacturers by and large confirm to important towns. The service facility is not sufficiently available in Meghalaya. Therefore, there is potential for such outlets.

BASIS AND PRESUMPTIONS

i. The basis for calculation of production capacity has been taken on single shift basis on 75% efficiency.

ii. The maximum capacity utilization on single shift basis for 300 days a year. During first year and second year of operations the capacity utilization is 60% and 80% respectively. The unit is expected to achieve full capacity utilization from the third year onwards.

iii. The salaries and wages, cost of raw materials, utilities, rents, etc. are based on the prevailing rates in and around Thrissur. These cost factors are likely to vary with time and location.

iv. Interest on term loan and working capital loan has been taken at the rate of 14% on an average. This rate may vary depending upon the policy of the financial institutions/agencies from time to time.

v. The cost of machinery and equipments refer to a particular make/model and prices are approximate.

vi. The break-even point percentage indicated is of full capacity utilization.

vii. The project preparation cost etc. whenever required could be considered under pre-operative expenses.

viii. The essential production machinery and test equipment required for the project have been indicated. The unit may also utilize common test facilities available at Electronics Test and Development Centres (ETDCs) and Electronic Regional Test Laboratories (ERTLs) set up by the State Governments and STQC Directorate of the Department of Information Technology, Ministry of Communication and Information Technology, to manufacture products conforming to Bureau of Indian Standards.

Notes

1. Many of the above activities shall be initiated concurrently.
2. Procurement of raw materials commences from the 8th month onwards.
3. When imported plant and machinery are required, the implementation period of project may vary from 12 months to 15 months.

3.0 PROCESS

When faulty equipment is received from a customer, an assessment of the nature of the complaint is made. An estimate for service/repair charges is made after checking the availability of components. Then through a systematic approach the actual fault is found and rectified. The repaired equipment is checked thoroughly for sufficient time

before it is handed over to the customers. Minor repairs may be carried out at the premises of the customer itself. The repair and servicing of majority of consumer electronic equipment is undertaken by the skilled technicians with the help of dedicated testing equipments.

Capacity

Qty.	Value (Rs.)
3380 Nos. jobs	8,88,000

Motive Power: **5KVA.**

4.0 CAPITAL INPUTS

4.1 Land & Building

Built up area	100 Sq. mts.
Office Stores	25 Sq. Mts.
Assembly and testing	75 Sq. Mts.
Rent payable per annum	Rs. 36,000

4.2 Machinery & Equipments

Sr. No.	Description	Ind./ Imp.	Qty.	Value (Rs.)
1.	Oscilloscope (20MHz)	Ind.	1	24000
2.	Pattern Generator Colour	Ind.	1	78000
3.	AM/FM Signal Generator	Ind.	1	8400
4.	Colour TV Kit	Ind.	1	8400
5.	Telephone Test Instrument	Ind.	1	3600
6.	Power Supplies (30 V, 2A)	Ind.	2	10800
7.	Digital Multimeter (4½ Digit)	Ind.	1	10200
8.	Portable Drill Machine	Ind.	1	8400
9.	Soldering/De soldering Station	Ind.	7	8400
10.	High Voltage TV Probe, TV/VCR Remote tester, Transistor Tester	Ind.		1800
			Total	162000
(iii)	Other Fixed Assets			
11.	Electrification charges @ 10% of the cost of machinery and equipment			16200
12.	Office equipments, furniture and working table etc			12000
13.	Tools, jigs and fixtures, soldering iron/station etc.			12000
14.	Pre-operative Expenses			12000
			Total	**52200**
			Total Fixed Capital	**214200**
			or Say	**214200**

4.3 Raw Material Requirement (per month)

Sr. No.	Particulars	Ind./Imp	Cost/unit (Rs.)
1	IC's Timer, Regulator etc.	Ind.	28,750
2	Transistor, Diodes, Ind. and LEDs etc.	Ind.	28,750
3	Resistors, capacitors, Ind. Presets, etc.	Ind.	28,750
4	Relays and buzzer Ind. 25,000	Ind.	28,750
5	PCB's	Ind.	28,750
6	Electro-mechanical Ind. components like switches, knobs, sockets, fuses, etc	Ind.	28,750
7	Telephone receiver Ind. components and other expensive components of TV-VCR etc	Ind.	28,750
8		Ind.	28,750
		Total	2,30,000

5.0 MANPOWER REQUIREMENT

Sr. No.	Description	No.	Salary	Amount (Rs)
1.	Service Engineer	1	5750	5750
2.	Skilled workers	4	2875	11500
3.	Peon/Helper	1	1725	1725
			Total	**18975**
	Add Perquisites @ 15% of salary			**2,846.25**
			Total	**21,821.25**
			or say	**22,000**

6.0 COST OF PROJECT

Sr. No.	Description	Amount (Rs.)
2.	Fixed Capital	200790
3.	Working Capital on 3 months basis	162000
	Total	**362790**

7.0 PROFITABILITY CALCULATIONS

Sr. No.	Cost of Production (per annum)	Amount (Rs.)
1.	Total recurring expenditure	648000
2.	Depreciation on machinery and equipment @ 10%	13150
3.	Depreciation on tools, jigs and fixtures @ 25%	2500
4.	Depreciation on office equipment, furniture @ 20%	2000
5.	Interest on total capital investment @ 16%	53856
	Total	**719506**
	or Say	**719500**

8.0 KEY ELEMENTS

- Skill to undertake servicing / repair of wide spectrum of consumer electronics items
- Market linkages

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PROJECT PROFILE
OF
MULTI–PURPOSE COMPUTER CENTRE FOR
IT ENABLED SERVICES/CYBER CAFE

1.0 INTRODUCTION & PRODUCT

Computers have changed complete global scenario of work and business. Today computers are widely used in each and every aspect of life. Apart from data processing, training and educational purpose computers have wide ranging commercial use coupled with internet. Through internet many commercial activities such as e-mail, browsing, web browsing, e-commerce are possible. Personal computer is still out of reach of a common man in our country due to high cost. In such a situation cyber cafes or multipurpose computer centers have recognized the need for the need of connectivity and are offering various packages at affordable prices. Apart from the IT enabled services the project also envisages the use of computer centre for other computer related activities such as data processing job and training activities for getting special customers. In general low startup cost, quick returns is the big attraction of the project.

2.0 MARKET POTENTIAL

The services sector is the fastest growing sector with an annual growth rate of eight percent mostly aided by the information technology revolution. IT enabled services has become one of the most significant industries in the world and it has tremendous potential of growth since the information is the key to decision making. Similarly the IT industry which is already growing at a rapid pace is likely to employ around 70 lakh persons by 2008 with the projected earning of $ 87 billion. As such the computer training is the key factor for new required manpower. Cyber café are therefore increasingly becoming popular day-by-day as new internet users are multiplying proportionately.

BASIS AND PRESUMPTIONS

i. The basis for calculation of production capacity has been taken on single shift basis on 75% efficiency

ii. The maximum capacity utilization on single shift basis for 300 days a year during first year and 2nd year of operations is 60% and 80% respectively. The unit is expected to achieve full capacity utilization from the 3rd year onwards.

iii. The salaries and wages, cost of raw materials, utilities, rents, etc. are based on the prevailing rates in and around Meghalaya. These cost factors are likely to vary with time and location.

iv. Interest on term loan and working capital loan has been taken at the rate of 16% on an average. This rate may vary depending upon the policy of the financial institutions/ agencies from time to time.

v. The cost of machinery and equipments refer to a particular make/model and prices are approximate.

vi. The break-even point percentage indicated is of full capacity utilization.

vii. The project preparation cost etc. whenever required could be considered under pre-operative expenses.

viii. The essential production machinery and test equipment required for the project have been indicated. The unit may also utilize common test facilities available at Electronics Test and Development Centres (ETDCs) and Electronic Regional Test

ix. Laboratories (ERTLs) set up by the State Governments and STQC Directorate of the Department of Information Technology, Ministry of Communication and Information Technology, to manufacture products conforming to Bureau of Indian Standards.

IMPLEMENTATION SCHEDULE

The major activities in the implementation of the project have been listed and the average time for implementation of the project is estimated at 12 months:

Sl No.	Name of Activity	Period In Months (Estimated)
1.	Preparation of project report	1
2	Registration and other formalities	1
3	Sanction of loan by financial institutions	3
4	Plant and Machinery:	
	(a) Placement of orders	1
	(b) Procurement	2
	(c) Power connection/ Electrification	2
	d) Installation/Erection of machinery/Test Equipment	2
5.	Procurement of raw materials	2
6.	Recruitment of Technical Personnel etc.	2
7.	Trial production	11
8.	Commercial production	12

Notes

i. Many of the above activities shall be initiated concurrently.

ii. Procurement of raw materials commences from the 8th month onwards.

iii. When imported plant and machinery are required, the implementation period of project may vary from 12 months to 15 months.

3.0 MANUFACTURING PROCESS

The hardware consists of the monitor, central processing unit, modem, hub, mouse, speakers and some other networking components. The software required covers a wide range right from the essential MS office set up to page maker and photo shop programme which enable to store photographs and graphics some of the most basic
programme need Internet explorer, Netscape, Navigation, Internet navigation programme, Eudora Microsoft, Outlook express, msn messenger etc. The activities of the cyber café are as under:

1. DTP activities such as designing and producing printed matters.
2. Computer awareness courses like window operation, internet, page maker, Microsoft excel etc. for Govt. employees, kids and other candidates.
3. Short term certificate courses such as compute fundamental, MS office, MS Dos, MS Window, Word Star, Internet, Web Designing etc.
4. IT enabled services which use the internet such as browsing, e-chatting, faxing and e-commerce and other e-activities.

Production Capacity (per annum)

Revenue	**(Rs.)**
DTP Work	4,80,000
Awareness/training programmes	6,00,000
IT enabled services	3,24,000
Total	14,04,000

Quality control and standards

- As per specifications

Motive Power 10KVA.

Pollution Control

The Govt. accords utmost importance to control environmental pollution. The small-scale entrepreneurs should have an environmental friendly attitude and adopt pollution control measures by process modification and technology substitution.

India having acceded to the Montreal Protocol in Sept. 1992, the production and use of Ozone Depleting Substances (ODS) like Chlorofluoro Carbon (CFC), Carbon Tetrachloride, Halons and Methyl Chloroform etc. need to be phased out immediately with alternative chemicals/ solvents. A notification for detailed Rules to regulate ODS phase out under the Environment Protection Act, 1986 have been put in place with effect from 19th July 2000.

The following steps are suggested which may help to control pollution in electronics industry wherever applicable:

i) In electronic industry fumes and gases are released during hand soldering/wave soldering/Dip soldering, which are harmful to people as well as environment and the end products. Alternate technologies may be used to phase out the existing polluting technologies. Numerous new fluxes have been developed containing 2-10% solids as opposed to the traditional 15-35% solids.

ii) Electronic industry uses CFC, Carbon Tetrachloride and Methyl Chloroform for cleaning of printed circuit boards after assembly to remove flux residues left after Soldering, and various kinds of foams for packaging.

Many alternative solvents could replace CFC-113 and Methyl Chloroform in electronics cleaning. Other Chlorinated solvents such as Trichloroethylene, Perchloroethylene and Methylene Chloride have been used as effective cleaners in electronics industry for many years. Other organic solvents such as Ketones and Alcohols are effective in removing both solder fluxes and many polar contaminants.

Energy Conservation

With the growing energy needs and shortage coupled with rising energy cost, a greater thrust in energy efficiency in industrial sector has been given by the Govt. of India since 1980s. The Energy Conservation Act, 2001 has been enacted on 18th August 2001, which provides for efficient use of energy, its conservation and capacity building of Bureau of Energy Efficiency created under the Act.

The following steps may help for conservation of electrical energy:

i) Adoption of energy conserving technologies, production aids and testing facilities.
ii) Efficient management of process/ manufacturing machineries and systems, QC and testing equipments for yielding maximum Energy Conservation.
iii) Optimum use of electrical energy for heating during soldering process can be obtained by using efficient temperature controlled soldering and desoldering stations.

iv) Periodical maintenance of motors compressors etc.

v) Use of power factor correction capacitors. Proper selection and layout of lighting system; timely switching on-off of the lights; use of compact fluorescent lamps wherever possible etc.

4.0 CAPITAL INPUTS

4.1 Land & Building

100 Sq. Mtr. (Built up area) on rental basis @ Rs. 6000 per month or Rs. 72,000 per annum

4.2 Plant & Machinery

Sr. No.	Description	Qty.	Value (Rs.)
1	Computer – Pentium IV.Intel IV 1,7/1.8/1.9. GHz and above, 256 Cache/128 DDR RAM/ Intel 845 Chipset based Motherboard/AGP 4 X32 MB Graphics/40 GB HDD /1.44 MB FDD/52 X CD ROM with MultiMedia Kit with Speakers/Scroll Mouse/Multi-Media 107 keys key board/ 15" VGA Colored Monitor (Digital) and Internal 56.6 KBPS Modem, 10/100 Mbps Ethernet Card Mini Tower Cabinet/2 Serial, 2 USB, 1 Parallel, 1 PS/2 Mouse Parts with Preloaded Software-Window 2000/XP Home and Anti virus	10 Nos. @ Rs 42,000 per set	4,20,000
2	Networking components	LS	24,000
3	Other Hardware and cards	LS	18,000
4	Cable, Modem and Internet Connection	LS	24,000
5	Scanner	1	18,000
6	Laser Printer	2 @ 18,000	36,000
7	CD Printer	1	8,400
8	UPS (500 VA/600 VA)	11 @ 3,600	39,600
9		Total	5,88,000
10	Electrification and installation charge @ 10% of the total cost of machinery and test equipment		58,800
11	Office furniture and equipment:		
12	a) Chairs (Revolving)	20	48,000
13	b) Chairs moulded	20	7,200
14	c) Tables and Desk and Recks	15	36,000
15	d) Air Conditioner (1 tonne each)	3 @ 24,000	72,000
16	e) Phone connection and instruments with EPBAX	2 connections and 5	12,000
17	Other Misc. Expenses	instruments	18,000
18		**Total**	**1,93,200**
19		**Total Fixed Capital**	**7,81,200**

4.3 Utilities (per month)

Particulars	Amount (Rs.)
Electricity	6,000
Water charges	220
Total	**6,220**

4.4 Raw Material Requirement

Sr. No.	Particulars	Qty.	(Rs.)
1	Computer Consumables	LS	11,500
2	Computer Stationery	LS	5,750
3	Initial charges for internet connection	LS	1,150
4	Telephone bills per month		4,600
		Total	23,000

5.0 MANPOWER REQUIREMENT

Sr. No.	Description	No.	Salary	Amount (Rs)
1.	Manager (Hardware/software engineer)	1	6,900	6,900
2.	Programme/ Faculty	2	4,600	9,200
3.	DTP Operator	1	4,600	4,600
4.	Peon/Watchman	2	2,300	4,600
			Total	**25,300**
	Perquisites @ 15% of salary			**3,795**
			Total	**29,095**

6.0 COST OF PROJECT

Sr. No.	Description	Amount (Rs.)
2.	Fixed Capital	8,05,000
3.	Working Capital on 3 months basis	2,43,225
	Total	**10,48,225**

7.0 PROFITABILITY CALCULATIONS

Sr. No.	Cost of Production (per annum)	Amount (Rs.)
1.	Total recurring expenditure per year	8,46,000
2.	Internet Charges to ISP	60,000
3.	Depreciation on machinery and equipment @ 10%	49,000
4.	Depreciation on Furnitures & office equipment, furniture @ 20%	32,200
5.	Interest on total capital investment @ 16%	1,45,800
6.	**Total**	**11,33,000**
	or Say	**719500**

8.0 KEY ELEMENTS

- Location of the project
- Recognition from appropriate Govt. authorities

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PROJECT PROFILE
OF
BAMBOO PRODUCTS

1.0 INTRODUCTION

North East Indian states in general and Meghalaya in particular have plenty of Bamboo cultivation. Significant proportion of forest land is occupied by Bamboo. The bamboo is of different varieties also.

2.0 PRODUCT

Bamboo articles are made out of resource based raw material in Meghalaya. Major application of bamboo products are bamboo baskets, bamboo partitions, candy sticks etc. Chandrikas, Trays required for sericulture industry can also be manufactured with Bamboos.

3.0 MARKET POTENTIAL

The baskets are used for temporarily storing, transportation of fruits, vegetables, grains etc. from fields to market or various places. The demand for the project is good especially in forest resource based areas. Bamboo articles produced through latest technology have more market potential.

4.0 MANUFACTURING PROCESS

Bamboos are split into thin wafers and then knitted into baskets by using supporting basket sticks. The project requires skilled labour.

5.0 CAPTIAL INPUTS

5.1 Land and Building

Rented : 500 per month

5.2 Machinery Equipment

Sr. No.	Item	Qty	Rate	Amount (Rs.)
1.	Knives and Fixtures	1	2400	2400
2.	Hand Tools	1	3600	3600
3.	Tables	1	6000	6000
4.	Total			12,000

5.3 Raw Material (per month)

Sr. No.	Item	Qty	Rate	Amount (Rs.)
1.	Bamboo Sticks	1000	9.2	9200
2.	Total			9,200

5.4 Utilities (per month)

Sr. No.	Item	Unit	Amount (Rs.)
1.	Power	LS	1100
2.	Water	LS	550
	Total		1650

6.0 MANPOWER

Sr. No.	Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
1.	Supervisor/Entrepreneur	1	3450	3450
2.	Skilled workers	3	2875	8625
3.	Unskilled workers	2	2875	5750
	Total			17825

7.0 COST OF PROJECT & MEANS OF FINANCE

Sr. No.	Particulars	
1.	Capacity	10000 Nos.
2.	Selling Price	Rs. 40.8 No.

7.1 Project Cost/Capital Investment

Sr. No.	Particulars	Amount (Rs.)
1.	Preliminary & Preoperative Expense	2300
2.	Fixed Capital	11500
3.	Working Capital for 1 month(s)	29900
	Total Project Cost	**43700**

7.2 Means of Finance

Sr. No.	Particulars	%age	Amount (Rs.)
1.	Promoter Contribution	15%	5700
2.	Subsidy	20%	7600
3.	Term Loan	65%	24700
	Total		**38000**

8.0 PROFITABILITY CALCULATIONS

8.1 Turn Over (per year)

Sr. No.	Particulars	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1.	Bamboo Products	Nos.	10000	40.8	408000
	Total				408000

8.2 Profitability Analysis & Ratios

1	Net Profit	Rs. 23536
2	Percentage of Profit on Sales	7%
3	Return on Investment	62%
4	Break Even Analysis	80%

8.2 Sales Revenue at 100%

(Rs. In lacs)

Sr. No.	Product	Qty (tonnes)	Selling Price (Rs.)	Sales
1.	Processed Cashew	15	2,22,000	33.30
2.	Cashew Shells	25	6,000	1.50
3.	**Total**			**34.80**

8.3 Raw and Packing Materials Required at 100%

(Rs. In lacs)

Sr. No.	Product	Qty (tonnes)	Rate per Ton.	Value
1.	Raw Cashew	50	40,250	20.12
2.	Packing Materials	--	--	0.57
3.	**Total**			**20.69**

8.4 Utilities

As spelt out earlier, per season expenses at 100% will be Rs.66, 000/-.

8.5 Interest

Interest on term loan of Rs. 5.10 lacs is computed @ 12% per annum assuming repayment in 4 years including a moratorium period of 1 year. Interest on working capital funds from bank is calculated @ 14%. per annum.

8.6 Depreciation

It is calculated on WDV basis @ 10% on building and 20% on machinery and other assets.

9.0 KEY ELEMENTS

- The unit should have latest machineries and market driven designs
- Required clearances from forest department

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PROJECT PROFILE
ON
MEDICINAL & AROMATIC PLANTS

1.0 INTRODUCTION

Traditionally, herbs were collected from wild but at present; they are being cultivated for commercial use in Ayurvedic formulations. These plants can be grown in less fertile soils and barren lands.

2.0 PRODUCT

The products under consideration include a range of products from medicinal plant. These are cultivated and available in abundance in forest areas of Meghalaya.

3.0 MARKET POTENTIAL

Herbal and ayurvedic products have been commanding wide acceptance due to no side effects and complete cure is possible for several diseases. Some of the medicinal and aromatic plants which are in demand are Sarpagandha, Ashwagandha, Pudina (Mint), Lemon grass, white musali etc. Ashwagandha is used in preparation of medicine of joint pain, asthma and Arthritis. It is also used to cure general weakness. Sarpagandha is used in controlling blood pressure and intestinal problem. Chiraita is useful in blood purification. Lemon grass and Pudina (Mint) have both medicinal and aromatic properties.

4.0 TECHNICAL ASPECTS

a) Capacity

The capacity of the project has been assumed as 2500 kg. of Ashwagandha roots per year.

b) Description of the plant and climatic conditions

Ashwagandha grows upto a height of 1.5 m; the flower is 1 cm long and the fruit 6cm in diameter. Ashwagandha is cultivated in sandy soil and also in clayey and less fertile soil. It is cultivated in the rainy season.

c) Process of cultivation

Ashwagandha can be cultivated either by planting saplings or sowing seeds. Saplings can be prepared in nurseries and planted. Sapling grown from seeds can also be planted. Normally the field is prepared in the month of May. Composite manure and cow dung is spread in the soil. Saplings are planted during early monsoon. The plant needs regular watering of roots after monsoon once they are transplanted.

5.0 CAPITAL INPUTS

5.1 Details of Plant & Machinery

S.No.	Items	Quantity	Value
1.	Agriculture implements like crow bars, spades, bucket etc.	Lump sum	30,000.00
2.	Water supply arrangement	Lump sum	36,000.00
		TOTAL	**66,000.00**

5.2 Power for irrigation

S.No.	Items	Total Cost (in Rs.)
1.	Power (5 HP x 0.75 x 8 hrs x 150 days x Rs. 3.50/unit)	15,750.00

100 Sq. Mtr. (Built up area) on rental basis @ Rs. 6000 per month or Rs. 72,000 per annumb

5.3 Raw Material Requirement

Sr. No.	Particulars	Qty.	Rate (Rs.)	Annual Value (Rs.)
1	Seeds	100 kg	143.75 per kg	14,375.00
2	Fertilizer and other consumables		LS	11,500.00
3	Pesticides		LS	1,725.00
			Total	**27,600.00**

6.0 MANPOWER REQUIREMENT

Sr. No.	Description	No.	Salary (Rs.)	Amount (Rs)
1.	Unskilled (Additional part time)	1	1725	20,700.00
2.	Unskilled (Casual) based on requirement	04	Rs. 86.25/day for 50 days in a year	17,250.00
			Total	**37,950.00**

7.0 COST OF PROJECT & MEANS OF FINANCE

Sr. No.	Item	Total cost (in Rs.)
1.	Land	Own/on lease
2.	Plant & Machinery	66,000.00
3.	Miscellaneous fixed Assets	2,750.00
4.	P&P Expenses	2,750.00
5.	Working Capital	11,000.00
	TOTAL	**82,500.00**
	Means of Finance	
1	Promoters' Contribution	24600
2	Loan	57900
	TOTAL	**82500.00**

Note: The State Channelizing Agencies shall arrange to provide subsidy to beneficiary (ies) as per norms of their Corporation. Further, SCAs may also make efforts to avail incentive/subsidy from other centrally approved schemes.

8.0 PROFITABILITY CALCULATIONS

Sr. No.	Items	Amount (Rs.)
A.	**Sales realization 2000 kg @ Rs. 80 per kg. Average**	**1,60,000.00**
B.	**Cost of production**	
i.	Raw material	24,000
ii.	Salary and wages	33,000
iii.	Power	15,750
iv.	Repairs & Maintenance	3,000
v.	Lease rent	5,000
vi.	Interest	4,080
vii.	Sustenance allowance for the beneficiary	24,000
viii.	Misc. Expenses	2,000
	TOTAL	**1,10,830**
	SAY	**1,11,000**
C.	**Cash Profit (A-C)**	**49,000**
D.	**Depreciation/amortization of expenses**	**6,000**
E.	**Net Profit**	**43,000**

9.0 KEY ELEMENTS

- Medicinal properties of the main raw material
- Market linkages
- Required permission from Food & Drug Control Administration

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PROJECT PROFILE
ON
GROUND MINERALS

1.0 INTRODUCTION

Meghalaya is one of the states with rich base of minerals. The various Ceramic minerals as quarried from minesare naturally available in the form of hard rocks or lumps. These minerals cannot be used directly in the various user industries like Refractories, Sanitary wares, Tiles and Glass industries and are mainly required in the form of dry ground powders or various grades and most sizes.

2.0 PRODUCT

The minerals like quart, feldspar, China clay, Ball day, Calcite, Limestone, Dolomite, Marble etc. are available. The ground minerals as envisaged as a product in the present report are used as raw materials in the various other major glass and ceramic industries. Thus, mineral grinding unit plays an important role in the industrial sector.

3.0 MARKET

Since ground minerals are the major raw –materials used in various items like ceramic industries, Chemical, Metallurgical industries etc. The industrial demand of these products is ever increasing all over the country. Despite the fact that there are many registered and non-registered units operating in the country, there is enough scope to cater the need of industrial sector. Reportedly, these are so many suppliers‟ traders and agents who supply the ground minerals to the existing industries from outside the state. Hence a stiff market competition in this sector is never ruled out. But maintenance of customer's specification to their satisfaction uniform quality, supply schedules and payment terms are the key to open vast marketing opportunities for new unit in this field.

BASIS AND PRESUMPTIONS

a. Working hours/shift	8Hrs (Single shift basis)
b. No. of working days/annum	:300 days
c. Efficiency for full capacity utilisation	80%
d. Time period for achieving minimum capacity utilization	: 3 years
e. Interest rate	: 13%
f. The project is estimated for at last 15 years and no major technological obsolescence is presumed during this life period	
g. 5% Handling loss is considered while grinding	

The cost of machinery and equipment refer to a particular make/model and prices are approximate.

i. The break-even point percentage indicated is of full capacity utilization.

ii The project preparation cost etc. whenever required could be considered under pre-operative expenses.

iii. The essential production machinery and test equipment required for the project have been indicated. The unit may also utilize common test facilities available at Electronics Test and Development Centres (ETDCs) and Electronic Regional Test

iv. Laboratories (ERTLs) set up by the State Governments and STQC Directorate of the Department of Information Technology, Ministry of Communication and Information Technology, to manufacture products conforming to Bureau of Indian Standards.

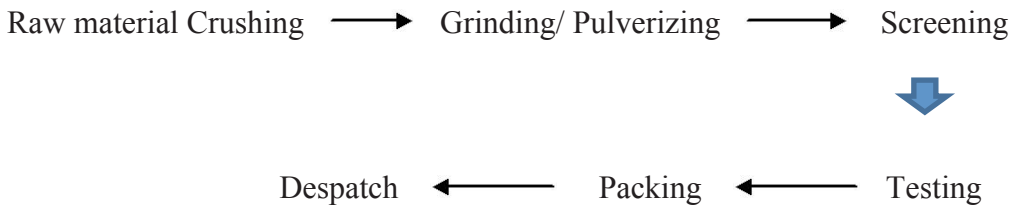
4.0 MANUFACTURING PROCESS

1. Process outline – Large sized rocks are manually hammered to suitable large lumps and fed into the Jaw crusher to achieve small piece of ½ "„ – 1" sizes. This mineral pieces are passed through a series of crushing & grinding machine like attrition type pulverize, edge runner mills, roll crusher etc. and then through a rotary screen and vibrating screen to get desired fineness of minerals. Finally the ground minerals are passed through magnetic separator to remove the iron particles. Then this ground minerals are packed as per the grade and sizes written in gunnery bags for despatch.

2. The quality is maintained as per the customer"s requirement in respect of fineness, grit content, Iron content etc. or as per the unit own specifications for general supply.

Required physical testing is essential for such plant. Chemical testing as and when required should be done to maintain suitable uniformity of standard for the various raw materials.

PROCESS FLOW CHART:



PRODUCTION CAPACITY (P.A.):

Quantity: 5700 MT, Value: Rs. 93, 48,000.
Motive Power: Appprox.60 HP.

POLLUTION CONTROL:

Due to restriction of air – pollution based industries; suitable control/preventive measures need to be under-taken in the production stage. The dust and fines emanated from the crushing, grinding, screening and subsequent stages should be arrested from polluting the air. Generally in such plant chutes from all existing points are centrally connected through ducting arrangements to an ex-house blower, the outlet of which is fitted to dust collectors and filter bags used to present air pollution.

ENERGY CONSERVATION:

Any amount of reduction in energy bills through efficient utilisation of machines and maintenance of mechanical and electrical fittings and such other measures is likely to minimise the cost of production.

5.0 CAPITAL INPUTS

5.1 Land & Building: (On Rent)

1.	Total covered area (Including Work shed, Office & Store etc.)	3000 sq.ft.
2.	Total open area (storage of raw materials & Finished product etc.)	17,000 sq. Ft
3.	Total: 20,000 sq. ft on rental basis	**Rs. 10,000/-**

5.2. Machinery & Equipment

Sl No:	Description	Qty.	Rate (Rs.)	Value(Rs.)
1	Primary Jaw Crusher 400 x 225	1	2,70,000	2,70,000
	mm. Capacity 9 MT per Hr. with 25			
	HP motor. (Indigenous)			
2	Secondary Jaw Crusher 350 x 150	1	1,20,000	1,20,000
	mm with 15 HP motor. Capacity 6			
	MT/Hr. (Indigenous)			
3	Attrition Type pulverizer, belt	1	96,000	96,000
	driven with 5 HP motor			
	(Indigenous)			
4	Edge-Runner Mill (1200 mm dia)	1	1,80,000	1,80,000
	with 4 HP motor, complete with			
	Electricals			
5	Rotary Screen, heavy Duty	1	60,000	60,000
	comprsing of meshes 10 mm to 50			
	mm complete with 5 HP motor &			
	accessories (Indigenous)			
6	Vibrating Screen, self driven	1	60,000	60,000
	comprising of meshes 1/8" to 100			
	meshes with motor & accessories.			
7	Magnetic Separator, with rectifier	1	42,000	42,000
	200 AC with 2.5 HP motor			
	(Indigenous)			
8	Wheel Barrows, Spare Jaws,		L.S.	42,000
	shovels, Jigs, Fixtures & tools.			
9	Belt Conveyors with 15 HP motors.	1	60,000	60,000
10	Testing Equipments		L.S.	48,000
11	Pollution control equipments (Dust		L.S.	90,000
	Collector) with exhaust fans &			
	outlets (Indignous)			
12	Erection & Commissioning		L.S.	60,000
13	Office Equipment.		L.S.	36,000
14	Freight & Insurance		L.S.	12,000
				11,76,000/-
	Pre-Operative Expenses (Rs.)			60,000/-

5.3 Utilities (per month)

Particulars	Amount (Rs.)
Electrical Power Charges (Average 12,000 units @ Rs. 4 per unit).	5,500
Water, Lubricating oil etc. (LS)	2200

5.4 Raw Material Requirement

Sr. No.	Raw Materials (in Lumy Forms)	Qty. (MTS)	Rate (Rs.)	Amount (Rs.)
1.	Quratz	100	920	92,000
2.	Feldspar	100	920	92,000
3.	China Clay	50	1,955	97,750
4.	Ball clay	50	2,300	1,15,000
5.	Limestone	50	805	40,250
6.	Marble	50	1,150	57,500
7.	Dolomite	50	805	40,250
8.	Other Minerals (Hardness below 7,	50	Average 1,150	57,500
9.	Gunnuy Bags/ Packing Materials etc. (Lump sum)			5,750
				5,98,000/-

6.0 MANPOWER REQUIREMENT

Sr. No.	Description	No.	Salary	Total (Rs)
1.	Manager	1	9,200	9,200
2.	Fireman/Supervisor	1	6,900	6,900
3.	Skilled Workers	3	4,600	13,800
4.	Semi-skilled workers	4	4,025	16,100
5.	Helpers	5	3,450	17,250
	Office Accountant cum store keeper	2	4,600	9,200
	Sales Person	3	4,600	13,800
	Peon cum watchman	2	3,450	6,900
			Total	**93,150**
	Perquisites @ 15% of salary			13,972.5
			Total	**1,07,122.5 ~1,07,200**

7.0 COST OF PROJECT & MEANS OF FINANCE

Sr. No.	Description	Amount (Rs.)
1.	Fixed Capital	11,84,500
2.	Working Capital	11,95,770
	Total	**23,80,270/-**

8.0 PROFITABILITY CALCULATIONS

Sr. No.	Cost of Production (per annum)	Amount (Rs.)
7.	Total recurring expenditure per year	83,18,400
8.	Depreciation on machinery and equipment @ 10%	89,000
9.	Depreciation on office equipment, furniture @ 25%	7,500
10.	Total interest on capital investment @ 13%	2,69,074
	Total	**86,84,000**

ADDRESSES OF MACHINERY & EQUIPMENT SUPPLIERS:

1. M/S D.P.Pulveriser Works, 12, Nagindas Master Road Extn., Opp. Maharashtra State Coop. Bank Ltd., Behind Museum Fort, Mumbai-400 023

2. M/S Durgapur Engg. Company Ltd. Marshall House, Room No. 448, 33/1 Netaji Subhash Road, Kolkata-700 001

3. M/S B.B.Engg. Works, 166/22, B.T.Road, Ashok Garh East. Kolkata-700 035

4. M/S Eastend Engg. Co., 173/1, Gopal Lal Thakur Road, Kolkata- 700 035

9.0 KEY ELEMENTS

- Required permission from Mineral Development authority of Govt. of Meghalaya
- NOC from Pollution control board
- Market is competitive

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PROJECT PROFILE
OF
MEAT GRAVY CONCENTRATE

1.0 INTRODUCTION

Meat gravy concentrate falls under the category of convenience food because its use avoids collection, metering and preparation (cleaning, cutting, frying, grinding etc.) of individual items. Meghalaya people prefer non vegetarian food. With many non-vegetarians preferring such products, there is a constant increase in demand. Shortage of time, changing lifestyles and general preference towards overall hygiene are some other reasons for popularity of this product. The product is aimed at the sophisticated consumers who want the traditional or typical taste, have lot of pressure on time and who appreciate and are willing to pay for the convenience. Hence, location of the factory has to be close to city / town in Meghalaya.

2.0 PRODUCT

2.1 Applications

Meat gravy concentrate contains all the ingredients used in traditional meat preparation. It can also be used as an adjunct along with other dishes as it contains a small quantity of meat ground to a fine paste to impart the necessary flavour. Chicken curry concentrate also has a good market potential but this note primarily deals with only meat gravy concentrate.

2.2 Availability of technical know-how and compliances

CFTRI, Mysore, has successfully developed the technological know-how. Meat content up to 10% does not require any special approval. However if it goes up beyond 10% then permission under MFPO is required. Compliance under the PFA Act is mandatory**.**

3.0 MARKET POTENTIAL

3.1 Demand and Supply

Convenience or instant food is the order of the day especially amongst the urban population. With working lifestyle as also food habits of people in Meghalaya such category of food has good potential. They are hard pressed for time and are willing to pay for good quality convenience food. Changing lifestyles and overall increase in the standard of living have witnessed substantial increase in demand for such items.

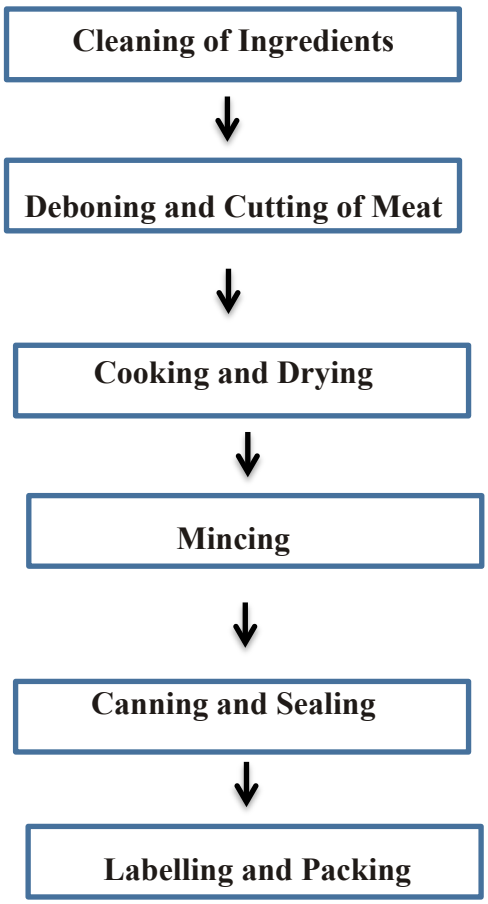
3.2 Marketing Strategy

Meat gravy concentrate can be offered in canned form which can be stored at ambient conditions for 6 to 8 months. Apart from individual customers, it can be offered as an intermediate type of product to large scale establishments and caterers. Big restaurants, speciality restaurants, railway and flight caterers, army establishments, hostels and canteens etc. could be bulk and regular clients.

4.0 MANUFACTURING PROCESS

The process starts with cleaning and preparation of various ingredients and deboning of meat and cutting it into pieces of 6-7 cms. Then these ingredients are cooked and dried. After mincing, all the ingredients are properly mixed and pre-heated at around 80-85 C. Finally, they are filled into lacquered cans; cans are sealed and processed/sterilised at a pressure of about 15 lbs PSI for about 40-45 minutes. Cans are immediately cooled, labelled and packed. The product should have a thick free-flowing consistency with a total solid content of 35-40%.

Process flow chart is as under:



5.0 CAPTIAL INPUTS

5.1 Land and Building

A plot of around 200 sq.mtrs. with built-up area of 125 sq.mtrs. would accommodate main production area, stores and packing room. Land may cost Rs. 2,00,000/- whereas cost of construction is assumed to be Rs. 4.37 lacs.

5.2 Machinery Equipment

Annual rated capacity of 240 tonnes with 2 shift working and 300 working days shall need following machinery:

Sr. No.	Item	Qty	Amount (Rs.)
1.	Spice Grinder- 25Kgs Capacity	1	60,000
2.	Mincer	2	48,000
3.	SS Steam Jacketed Kettles- 100Kgs Capacity each	2	72,000
4.	Roaster	1	42,000
5.	Straight Line Exhaust Box of 3962mm long	1	90,000
6.	Canning Retort	1	72,000
7.	Can Reformer	1	60,000
8.	Can Seamer	1	78,000
9.	Mini Boiler- 100Kgs Capacity	1	96,000
10.	Weighing Scale, knives, SS utensils etc	--	72,000
11.	Total		**6,90,000**

5.3 Raw and Packing Material

The major raw materials are whole as well as ground spices, oil, meat and salt. All of them are available easily. For packing materials like lacquered cans, labels, corrugated boxes etc. prior arrangements are necessary

5.4 Utilities

Total power requirement shall be 40 HP whereas water requirement shall be 4000 ltrs every day. Coal or LDO shall be needed for boiler.

5.5 Miscellaneous Assets

Other assets like furniture and fixtures, packing tables, plastic crates, storage racks, exhaust fans etc. would cost Rs.0.93 lac.

6.0 MANPOWER

Sr. No.	Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
1.	Skilled workers	2	2875	5750
2.	Semi-skilled workers	2	2625	5250
3.	Helpers	4	1437.5	5750
4.	Salesman	1	2875	2875
5.	**Total**			**19625**

7.0 COST OF PROJECT & MEANS OF FINANCE

7.1 Land and Building

Sr. No.	Particulars	Area (Sq. Mtrs)	Amount (Rs.)
1.	Land	200	2,00,000
2.	Building	125	4,37,500

7.2 Machinery

Total cost of machinery is estimated to be Rs. 6.90 lacs as explained earlier.

7.3 Miscellaneous Assets

It is estimated that an amount of Rs.93, 500/- shall have to be spent on other assets.

7.4 Preliminary & Pre-operative Expenses

There will be many pre-production expenses like registration, establishment, travelling and administrative expenses, interest during implementation, trial runs etc. for which an amount of Rs. 1.37 lacs is earmarked.

7.5 Working Capital Requirements

At 60% capacity utilisation in the first year, the working capital needs would be as under:

(Rs. in lacs)

Sr. No.	Particulars	Period	Margin	Total	Bank	Promoters
1.	Stock of Raw and Packing Materials except meat	½ Month	30%	1.45	1.00	0.45
2.	Stock of Finished Goods	½ Month	25%	2.40	1.80	0.60
3.	Receivables	½ Month	25%	3.30	2.50	0.80
4.	Working Expenses	1 Month	100%	0.60	--	0.60
5.	**Total**			**7.75**	**5.30**	**2.45**

7.6 Cost of the Project & Means of Financing

(Rs. in lacs)

Sr. No.	Item	Amount
1.	Building	6.37
2.	Machinery	6.90
3.	Miscellaneous Assets	0.93
4.	P&P Expenses	1.37
5.	Contingencies @ 10% on Land and Building and Plant & Machinery	1.32
6.	Working Capital Margin	2.69
7.	**Total**	**19.58**
8.	**Means of Finance**	
9.	Promoters' Contribution	5.88
10.	Term Loan from Bank/FI	13.70
11.	**Total**	**19.58**
12.	Debt Equity Ratio	2.32 : 1
13.	Promoters' Contribution	30%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

8.0 PROFITABILITY CALCULATIONS

8.1 Production Capacity & Build up

As against the rated annual capacity of 240 tonnes, utilisation in the first year is assumed to be 60% and thereafter it is restricted to 75%.

8.2 Sales Revenue at 100%

Assuming selling price of Rs. 3,45,000/- per ton, annual sales at 100% would be Rs. 828.00 lacs.

8.3 Raw & Packing Material Required at 100%

(Rs. in lacs)

Sr. No.	Particulars	Qty. (Tonnes)	Price/Ton (Rs.)	Value
1.	Meat	50	2,00,000	100.00
2.	Spices	30	1,00,000	30.00
3.	Edible Oil	24	63,250	15.18
4.	Salt, preservatives etc.	--	--	2.76
5.	Packing Materials @ Rs.10,000/Ton	--	--	27.60
6.	Total			94.99

8.4 Selling Expenses

A provision of 22.5% of sales income each year is made towards transportation, selling commission & incentives, publicity etc.

8.5 Sales Revenue at 100%

(Rs. In lacs)

Sr. No.	Product	Qty (tonnes)	Selling Price (Rs.)	Sales
1.	Processed Cashew	15	1,85,000	27.75
2.	Cashew Shells	25	5,000	1.25
3.	**Total**			**29.00**

8.6 Raw and Packing Materials Required at 100%

(Rs. In lacs)

Sr. No.	Product	Qty (tonnes)	Rate per Ton.	Value
1.	Raw Cashew	50	35,000	17.50
2.	Packing Materials	--	--	0.50
3.	**Total**			**18.00**

9.0 KEY ELEMENTS

- Eating habits of people of Meghalaya
- Quality and freshness of key raw materials

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PROJECT PROFILE OF GRANITE TILES UNIT

1.0 INTRODUCTION

The construction activity has witnessed rapid development during the last few decades and with the expansion in government and private construction activity, there is increased return on investment.

2.0 PRODUCT

Granite tiles are products for mainly ornamental purpose. With Meghalaya having good base in granites of different kind Granite tiles is suggested.

3.0 MARKET POTENTIAL

Granite tiles having good demand in the world market as decorative monumental materials. There is vast scope for using granite form meteorological purpose with good export prospects. There is rising trend in the use of granite stone for their strength, glassy finish and everlasting colour. Granite can be used to create beautiful novelty designs. These products have good market in the country and abroad.

4.0 TECHNICAL ASPECTS

4.1 Manufacturing Process

The big boulders brought from mines are cut to slabs of desired thickness and these slabs are cut horizontally and vertically to size on granite block sizing machine with diamond impregnated saws. These square or rectangular tiles are polished on granite polishing machine firstly with steel grits then with other grinding media like silicon, carbide, redoxide, cerium oxide rough and smooth powders. Later these are given wax polish and kept ready for marketing.

4.2 Production Capacity Per Annum

Capacity 24400 sq.ft

Selling Price Rs. 114 sq. ft.

5.0 CAPTIAL INPUTS

5.1 Land and Building

Rented 3000 per month.

5.2 Machinery Equipment

Sr. No.	Item	Qty	Rate	Amount (Rs.)
1.	Verticular Circular saw cutting m/c	1	960000	960000
2.	Standard accessories with power supply	1	72000	72000
3.	Gear box with moor for auto vertical return	1	48000	48000
4.	Heavy duty polishing machine	1	192000	192000
5.	Jig plates with clamps	1	48000	48000
6.	Stabdar accessories with 5 HP motor			0
7.	starter, psh buttons, coolant system	1	96000	96000
8.	Office furniture	LS	36000	36000
9.	Electrification and accessories	LS	144000	144000
10.				**15,96,000**

5.3 Raw Material (per month)

Sr. No.	Item	Unit	Qty.	Rate	Amount (Rs.)
1.	Jobwork Expenses	Cu.mts	35	920	32200
2.	Energy Poweder	LS	1	34500	34500
3.				32200	32200
4.	Total				98900

5.4 Utilities (per month)

Sr. No.	Description	Unit	Amount (Rs.)
1.	Power	LS	16500
2.	Water	LS	1150
3.	Total		**17650**

5.5 Miscellaneous Assets

Other assets like furniture and fixtures, packing tables, plastic crates, storage racks, exhaust fans etc. would cost Rs.0.93 lac.

6.0 MANPOWER

Sr. No.	Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
1.	Supervisor/Entrepreneur	1	2875	2875
2.	Skilled workers	4	2300	9200
3.	Unskilled workers	6	1725	10,350
4.	Office Staff	3	2300	6900
5.	**Total**			**29325**

7.0 COST OF PROJECT & MEANS OF FINANCE

Sr. No.	Particulars	Amount (Rs.)
1.	Preliminary & Preoperative Expenses	5750
2.	Fixed capital	1529500
3.	Working capital for 1 month(s)	69000
4.	Total	1604250

7.1 Turnover (per year)

Sr. No.	Particulars	Unit	Qty.	Rate Rs.	Amount (Rs.)
1.	Granite Tiles	Sq. ft.	28000	19.2	537600
2.	Total				537600

8.0 PROFITABILITY CALCULATIONS

8.1 Profit Analysis & Ratios

1 Net Profit	Rs. 103587
2 Percentage of Profit on Sales	23%
3 Return on Investment	22%
4 Break Even Analysis	62%

9.0 KEY ELEMENTS

- Required permission from Mineral Development Authorities
- Market is competitive
- New designs as per market requirement

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PROJECT PROFILE OF LIME KILN

1.0 INTRODUCTION

Lime is also called as quick lime or unslaked lime, which is made out of limestone. The lime stone deposits are widely spread throughout the country. Meghalaya also has substantial availability of lime stone. The lime is extensively used as a mortar in the construction of buildings by mixing with suitable proportion of sand and burnt clay as aggregate. It is also used for white washing of houses and buildings. Iron & steel plants and laundries use lime as a fluxing agent in considerable quantities.

2.0 MARKET POTENTIAL

There is a rapid development in the construction of buildings under Rural and Urban Areas Housing Development Programme and industrialisation throughout the country, there is a good demand for the lime products. In view of this, there is a very good scope for setting up new units in this line of manufacture. Meghalaya with its changing life style has good scope for building industry. This in turn would support this project.

3.0 TECHNICAL ASPECTS

3.1 Manufacturing Process

Limestone is washed and cleaned for removal of impurities and crushed into smaller lumps. These are calcined at a temperature of about 900 degrees C in a lime kiln. The kiln is loaded with alternative layers of coal and lime stone in suitable proportions for better transformation of heat and calcination of the material. Properly calcined lime is sorted out ash is removed unburnt piece if any is recharged in the furnace. Burnt lime is packed and marketed.

3.2 Production Capacity Per Annum

Capacity	50000 Kg
Selling Price	Rs. 12 per kg.

4.0 CAPTIAL INPUTS

4.1 Land and Building

Rented	3000 per month.

4.2 Machinery and Equipment

Sr. No.	Item	Qty	Rate	Amount (Rs.)
1.	Swing hammer mill - 2 MT/day capacitywith motor, starter, etc	1	12000	12000
2.	Rotary screen with various mesh sizes with motor, starter, etc	1	12000	12000
3.	Lime kiln - country typelined inside special bricks - 2 MT/day cap.	1	72000	72000
4.	Erection and installation charges			12000
5.	Almirah, table, chairs, etc			12000
6.	Total			**120000**

4.3 Raw Material (per month)

Sr. No.	Item	Unit	Qty.	Rate	Amount (Rs.)
1.	LimeStone	Kgs	5000	9.00	45000
2.	Packing material	LS			1150
3.	Total				46150

4.4 Utilities (per month)

Sr. No.	Description	Unit	Amount (Rs.)
1.	Power	LS	1100
2.	Coal (fuel) – 1 MT	LS	1650
3.	Water	LS	220
4.	Total		**2970**

4.5 Fixed Cost (per year)

Sr. No.	Description	Amount (Rs.)
1.	Depreciation	15750
2.	Interest	11092
3.	Rent	24000
4.	Salaries & Wages @ 40%	60000
5.	Other Expenses incl. Utilities @ 40%	20160
6.	Total	**131002**

5.0 MANPOWER

Sr. No.	Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
1.	Supervisor/Entrepreneur	1	2875	2875
2.	Skilled workers	4	2300	9200
3.	Unskilled workers	6	1725	10,350
4.	Office Staff	3	2300	6900
5.	**Total**			**29325**

6.0 COST OF PROJECT & MEANS OF FINANCE

Sr. No.	Particulars	Amount (Rs.)
1.	Fixed capital	120750
2.	Working capital for 1 month(s)	37030
3.	Preliminary & Preoperative Expns.	5750
4.	Total	163530

6.1 Means of Finance

Sr. No.	Particulars	Unit	Amount (Rs.)
1.	Promoter contribution	15%	21330
2.	Subsidy/Soft loan	20%	28440
3.	Term loan	65%	92430
4.	Total		142200

8.0 PROFITABILITY CALCULATIONS

8.1 Turn Over (per year)

Sr. No.	Particulars	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1.	Quick lime	kg.	50000	40	2000000
	Total				2000000

8.2 Profit Analysis & Ratios

1 Net Profit	Rs. 86758
2 Percentage of Profit on Sales	17%

9.00 KEY ELEMENTS

- Required permission from Mineral Development Authorities
- Preserving ecology
- Market linkages

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PROJECT PROFILE
ON
HONEY BASED BEVERAGES

1.0 INTRODUCTION :

Natural honey is abundantly available in various areas of India. This can be consumes fresh or stored by canning or bottling. It is used as an antiseptic and applied to wounds, burns and mouth ulcers and is used in Ayurvedic medicines. CFTRI has developed technology for honey based beverages. Govt. of Meghalaya is aggressively promoting honey cultivation.

2.0 PROCESS OF MANUFACTURING:

A known quantity of honey is added to the hot Syrup, which is prepared by using sugar, Citric acid and Water, and heated to the desired temperature. Preservative is added after cooling the Syrup. The beverage so prepared is transferred into a sedimentation tank and allowed to settle for a period of 24 hours. The clear liquid beverage taken out from the tank further filtered either through a supercell bed prepared on a Whatman filter paper using suction or using a sparkler dual disc filter. The clarified beverage is heated to a desired temperature, permitted food colour is added and then filled hot into sterilized bottles and crown corked.

3.0 CAPITAL INPUTS

3.1 Plant & Machinery

Steam jacketed kettles, Stainless Steel Tanks, Bottle washing machine Bottle filling machine, Heavy duty crown corking machine, funnels / flasks, Vacuum pump, Weighing scale.

3.2 Estimated Annual Production Capacity

Sr.No.	Particulars	Capacity in tons	Rate	Total Value (Rs.)
1	Honey Based Beverages			1367.00
	TOTAL	**0.00**	**0.00**	**1367.00**

- Raw Material : Rs. 6,90,000.00
- Packing Material : Rs. 34,500.00

4.0 MANPOWER

Wages (3-Skilled & 3-Unskilled) : Rs.4,83,000.00

Salaries (MANAGER-1) : Rs.96, 600.00

5.0 COST OF PROJECT :

Sr. No.	Item	Total cost (in Rs.)
a.	Capital Expenditure	
	Land	Own
	Workshe sq.mtrs	
	Equipment	8,05,000.00
	Total Capital Expenditure	8,05,000.00
b.	Working Capital	2,70,250.00
	TOTAL PROJECT COST :	**18,80,250.00**

6.0 PROFITABILITY

Sr. No.	Items	Amount (Rs.)
1.	Administrative Expenses	**Rs. 40,000**
2.	Overheads	**44,000**
3.	Miscellaneous Expenses	20,000
4.	Depreciation	70,000
5.	Insurance	7,000
6.	Interest (As per the PLR)	
	a. C. E. Loan	91,000
	b. W. C. Loan	30,550
7.	Total Interest	121,550
8.	Working Capital Requirement	
	Fixed Cost	242,000
	Variable Cost	1,124,550
	Requirement of W.C. per Cycle	227,758

7.0 COST ANALYSIS

Sr.No	Particulars	Capacity Utilization(Rs in '000)			
		100%	60%	70%	80%
1	**Fixed Cost**	242.00	145.20	169.40	193.60
2	**Variable Cost**	1125.00	675.00	787.50	900.00
3	**Cost of Production**	1367.00	820.20	956.90	981.10
4	**Projected Sales**	1700.00	1020.00	1190.00	1360.00
5	**Gross Surplus**	333.00	199.80	233.10	266.40
6	**Expected Net Surplus**	263.00	130.00	163.00	196.00
Note :	All figures mentioned above are only indicative.				
	1. If the investment on Building is replaced by Rental then: a. Total Cost of Project will be reduced. b. Profitability will be increased. c. Interest on C.E.will be reduced				

8.0 KEY ELEMENTS

- Quality and availability of natural honey
- Process parameters to retain qualities of honey
- Market linkages

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PROJECT PROFILE
ON
HONEY CREAM MANUFACTURING

1.0 INTRODUCTION :

Due to the Biological origin of honey and various environmental factors most Indian honeys have tendency to granulate under favorable conditions. Such "granulated" honeys generally considered as "adulterated "by the common consumers. Granulation of honey is in fact a natural phenomenon and a test of purity. Though in India granulated honey is not preferred but in the developed countries it is considered as an advantage for the preparation of the' Honey Cream'.

2.0. PROCESS OF MANUFACTURING:

In a Clean S.S. Vessel took 8 kg processed Honey in liquid form , 1 kg. (10%) Granulated Honey which acts as Seed is ground well in a Grinder or Mortar. Liquid honey (8 kg), finely ground seed honey and 10% powder sugar mixed and stirred at 60 R.P.M at 50 degree centigrade in a industrial Homogeniser for 4 hrs. Filled in attractive wide mouth bottles and allowed to settle in 15 days the product will settle in the form of fine Cream.

3.0 CAPITAL INPUTS

3.1 Plant & Machinery

1)Jacketed vessel (s.s.) fitted with homogeniser, 2)Mixer/Grinder, 3) Vessels, scoops, 4) Strainers, 5) Spoons, 6) S.S Trays, 7)Gas connection with stove, 8) Filling packaging and sealing machine

3.2 Estimated Annual Production Capacity

Sr.No.	Particulars	Capacity in tons	Rate	Total Value (Rs.)
1	Honey Cream			2003.68
	TOTAL	**0.00**	**0.00**	**1807.68**

- Raw Material : Rs. 1,581,825.00
- Packing Material : Rs. 1,84,000.00

4.0 MANPOWER

Wages (3-Skilled & 3-Unskilled) : Rs.165,600.00

Salaries (MANAGER-1) : Rs.172,500.00

5.0 COST OF PROJECT :

Sr. No.	Item	Total cost (in Rs.)
a.	Capital Expenditure	
	Land	Own
	Workshed sq.mtrs	13,800
	Equipment	172,500
	Total Capital Expenditure	186,300
b.	Working Capital	362,250
	TOTAL PROJECT COST :	**734,850**

6.0 PROFITABILITY

Sr. No.	Items	Amount (Rs.)
1	Administrative Expenses	45,000.00
2	Overheads	60,000.00
3	Miscellaneous Expenses	6,000.00
4	Depreciation	15,600.00
5	Insurance	1,620.00
6	Interest (As per the PLR)	
	a. C. E. Loan	21,060.00
	b. W. C. Loan	40,950.00
7	Total Interest	62,010.00
8	Working Capital Requirement	
9	Fixed Cost	223,680.00
10	Variable Cost	1,780,450.00
	Requirement of W.C. per Cycle	334,022.00

7.0 COST ANALYISIS

Sr.No	Particulars	Capacity Utilization(Rs in '000)			
		100%	60%	70%	80%
1	Fixed Cost	223.68	134.21	156.58	178.94
2	Variable Cost	1780.00	1068.00	1246.00	1424.00
3	Cost of Production	2003.68	1202.21	1402.58	1424.94
4	Projected Sales	2000.00	1200.00	1400.00	1600.00
5	Gross Surplus	2200.00	1320.00	1540.00	1760.00
6	Expected Net Surplus	2184.00	1304.00	1524.00	1744.00
Note :	All figures mentioned above are only indicative.				
	2. If the investment on Building is replaced by Rental then: a. Total Cost of Project will be reduced. b. Profitability will be increased.				

8.0 KEY ELEMENTS

- Quality and availability of natural honey
- Process parameters to retain qualities of honey
- Market linkages

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PROJECT PROFILE
ON
HONEY JAM MANUFACTURING

1.0 INTRODUCTION :

Honey is known for its nutritive value and used in various food and medicinal applications. Due to the increasing awareness of honey, various value added products may have good acceptability in India. Use of honey in diversified products will increase its consumption. This will help in increase of honey sales and to increase the revenue of the beekeepers. Thus the Honey Based Value Added Food Products Industry will create direct and indirect employment in the rural sector.

2.0. PROCESS OF MANUFACTURING:

1) Wash the fruits (3 ripe mangoes, 1 meddium size papaya 1 medium size pineapple 5 medium size guava) and boiled in water for 10 minutes. 2) Peeled the fruits and extracted the pulpwith the help of amixer grander 3) In a coppeer bottom Steel Vessel take the fruit pulp sugar and citric acid and boiled for 5 minutes 4) Added 25 ml pectin (Prepared by dissolving 10 gms pectin in 25 ml water) and continued boiling for 2 more minutes with vigororous stirring 5) Stopped heating and added 2 Gms of potassium metabisulphite preservative after dissolving in tittle water and kept the container tightly closed 6) When the contents are cooled to about 65 C added honey and mixed will 7) Filled hot in 500 ml vide mouth glass bottles with lug cap and sealed.

3.0 CAPITAL INPUTS

3.1 Plant & Machinery

1) Decliming paddles, 2)Wooden drums, 3) Wooden drums for stuffing, 4) Fleshing machine, 5) Band Knif spilitting machine, 6) Jack setting machine, 7)Toggles board, 8) Parallel straps, 9) Buffing machine, 10) Tools and equipment

3.2 Estimated Annual Production Capacity

Sr.No.	Particulars	Capacity in tons	Rate	Total Value (Rs.)
1	Honey Jam			1028.68
	TOTAL	**0.00**	**0.00**	**6998.00**

- Raw Material : Rs. 6,83,100.00
- Packing Material : Rs. 11,500.00

4.0 MANPOWER

Wages (3-Skilled & 3-Unskilled) : Rs.165,600.00

Salaries (MANAGER-1) : Rs. 138,000.00

5.0 COST OF PROJECT :

Sr. No.	Item	Total cost (in Rs.)
a.	Capital Expenditure	
	Land	Own
	Workshed sq.mtrs	13,800
	Equipment	172,500
	Total Capital Expenditure	172,500
b.	Working Capital	1,89,750
	TOTAL PROJECT COST :	**548,550**

6.0 PROFITABILITY

Sr. No.	Items	Amount (Rs.)
1	Administrative Expenses	45,000.00
2	Overheads	60,000.00
3	Miscellaneous Expenses	12,000.00
4	Depreciation	15,600.00
5	Insurance	1,620.00
6	Interest (As per the PLR)	
	a. C. E. Loan	21,060.00
	b. W. C. Loan	21,450.00
7	Total Interest	42,510.00
8	Working Capital Requirement	
9	Fixed Cost	199,680.00
10	Variable Cost	829,450.00
	Requirement of W.C. per Cycle	171,522.00

7.0 COST ANALYSIS

Sr. No	Particulars	Capacity Utilization(Rs in '000)			
		100%	60%	70%	80%
1	Fixed Cost	199.68	119.81	139.78	159.74
2	Variable Cost	829.00	497.40	580.30	663.20
3	Cost of Production	1028.68	617.21	720.08	740.04
4	Projected Sales	1750.00	1050.00	1225.00	1400.00
5	Gross Surplus	721.32	432.79	504.92	577.06
6	Expected Net Surplus	706.00	417.00	489.00	561.00
Note :	All figures mentioned above are only indicative.				
	c. If the investment on Building is replaced by Rental then: a. Total Cost of Project will be reduced. **b.** Profitability will be increased. **c.** Interest on C.E.will be reduced				

8.0 KEY ELEMENTS

- Quality and availability of natural honey
- Process parameters to retain qualities of honey
- Market linkages

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PROJECT PROFILE
ON
HONEY JELLY MANUFACTURING

1.0 INTRODUCTION :

Honey is known for its nutritive value and used in various food and medicinal applications. Due to the increasing awareness of honey, various value added products may have good acceptability in India. Use of honey in diversified products will increase its consumption. This will help in increase of honey sales and to increase the revenue of the beekeepers. Thus the Honey Based Value Added Food Products Industry will create direct and indirect employment in the rural sector.

2.0 PROCESS OF MANUFACTURING:

1) In a Copper bottomed S.S. Vessel took 200 ml. water, added 400 gm Sugar, 04 gm Citric acid and boiled for 10 minutes with constant stirring. 2) Added 50 ml Pectin (Prepared by dissolving 10 ml. Lime juice and continued boilding for 02 more minutes with vigorous strirring . 3) Spread on Butter paper placed on a plate and when settled. Made into uniform pieces of about 10 gm each, wrapeed in Gelaltin paper and packed. Note : The above items for total quantity of 1 kg. ingredients in proportionate quantity shall be used for more / less quantity.

3.0 CAPITAL INPUTS

3.1 Plant & Machinery

1) Jackted Vessel (S.S.) fitted with Homogeniser 2) Mixer / Grinder 3) Vessel 4) Scoops 5) Strainers 6) Spoons 7) Gas Connection with Stove 8) Filling ,Packing and Sealing Machin 9) Solar Heating System.

3.2 Estimated Annual Production Capacity

Sr.No.	Particulars	Capacity in tons	Rate	Total Value (Rs.)
1	Honey Jelly	30000.00		973.68
	TOTAL	30000.00	**0.00**	**880.68**

- Raw Material : Rs. 6,83,100.00

- Packing Material : Rs. 11,500.00

4.0 MANPOWER

Wages (1-Skilled & 1-Unskilled) : Rs.1,65,600.00

Salaries : Rs. 1,72,500.00

5.0 COST OF PROJECT :

Sr. No.	Item	Total cost (in Rs.)
a.	Capital Expenditure	
	Land	Own
	Workshed sq.mtrs	
	Equipment	172,500
	Total Capital Expenditure	172,500
b.	Working Capital	184,000
	TOTAL PROJECT COST :	**529,000**

6.0 PROFITABILITY

Sr. No.	Items	Amount (Rs.)
1	Administrative Expenses	15,000.00
2	Overheads	5,000.00
3	Miscellaneous Expenses	12,000.00
4	Depreciation	15,600.00
5	Insurance	1,620.00
6	Interest (As per the PLR)	
	a. C. E. Loan	21,060.00
	b. W. C. Loan	20,800.00
7	Total Interest	41,860.00
8	Working Capital Requirement	
9	Fixed Cost	199,680.00
10	Variable Cost	773,800.00
11	Requirement of W.C. per Cycle	162,247.00

7.0 COST ANALYSIS

Sr. No	Particulars	Capacity Utilization(Rs in '000)			
		100%	60%	70%	80%
1	Fixed Cost	199.68	119.81	139.78	159.74
2	Variable Cost	774.00	464.40	541.80	619.20
3	Cost of Production	973.68	584.21	681.58	701.54
4	Projected Sales	1200.00	720.00	840.00	960.00
5	Gross Surplus	226.32	135.79	158.42	181.06
6	Expected Net Surplus	211.00	120.00	143.00	165.00
Note :	All figures mentioned above are only indicative.				
	d. If the investment on Building is replaced by Rental then: e. Total Cost of Project will be reduced. **f.** Profitability will be increased. **g.** Interest on C.E.will be reduced				

8.0 KEY ELEMENTS

- Quality and availability of natural honey
- Process parameters to retain qualities of honey
- Market linkages

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PROJECT PROFILE OF P.P. FILES & FOLDER

1.0 INTRODUCTION & PRODUCT

The advantages of PP files & folders are as follows:

Recycle, Soft, hence convenient to use, available in various colours,, long lasting, Eco-friendly, more durable, available in different colours, different finishes, elegant and moisture proof. A PP file& folder is aesthetically better which befits the stature of a company. The PP file thickness varies between 0.18 mm to 1.25 mm.

A wide range of PP products apart from PP files such as presentation album or display books, ring binders and PP refillable note books, PP letter files, expansion cases for holding cheque books etc. business card holders, clear holders and sheet protectors, presentation folders and report covers, document action cases and system boxes are now available.

Printing on PP Files & Folders is done by screen printing and the ink used is indelible PVC ink. Printing on PP files is not as good as that on cardboard since the ink might fade due to moisture.

The shelf life of PP file is about 40 years, hence though costlier than a cardboard file is over all economical.

A PP file is more convenient to use i.e. can be folded.

2.0 MARKET POTENTIAL

2.1 Demand and Supply

PP file folders are now a days widely used in all Conferences/Seminars and offices to keep the document in a better condition and safe. These are available in various colours and appearance is good, therefore preferred to a card board files. The consumption of IP Sheet during 2004-05 was 7 KT, which is likely to increase to 22 KT by 2010-11, as projected by working group on Petrochemicals, Min. of Chemicals & Fertilizers./ Two layer PP sheet upto 0.15 mm thickness is suitable for different types of stationery materials, which is rapidly gaining market acceptance in India.

2.2 Marketing Strategy

2.3 Basis & Presumptions

(i) The output capacity is taken as 120 Kgs/hr. The unit will work at 20 hrs. per day for 25 working days in a month and 300 days in a year. The output capacity may vary from machinery to machinery and the cost of machinery may also vary from supplier to supplier.

(ii) The time period for achieving the full envisaged capacity utilisation is six months

(iii) The labour wages are as per the prevailing rates in the market

(iv) The rate of interest for fixed and working capital is taken as 12 per cent

(v) The margin money requirement for this project is 30 per cent

(vi) The pay back period of this project is 5 years

(vii) The rate of land is taken @ Rs. 1000/-per sq. mtr. and construction charges are taken @ Rs. 3500 per sq. mtr. This may also vary from place to place.

(viii) The present profile has to be updated taking into prevailing cost of land, building, machinery etc. at the time of implementation of the project

3.0 TECHNOLOGY INFRASTRUCTURE

3.1 Production Capacity(Per Annum)

(a)	Quantity (M.T.)	:	200
(b)	Value (Rs.)	:	1,40,00,000.00

3.2 Manufacturing Process

The extruder is often equipped with a gear pump to regulate output and control sheet thickness and quality, two crucial aspects of sheet production. The slot die, with the die lip opening set slightly greater than the desired sheet thickness, extrudes the melt at 200^{O} C to 230^{O} C, horizontally into a nip between two rolls of a three roll stack. A small bead of melt is usually built up in the first nip so that the surface of the sheet may be polished by the bottom roll prior to being cooled by the central roll. This action helps provide uniform thickness across the sheet and gives a smoother surface to the air side of the sheet. Except in very thick sheets, crystallisation is usually complete through the thickness before leaving the first cooling roll, and the second cooling roll is simply for the removal of additional heat. The sheet passes over a roller conveyor, which sometime will employ fans to measuring device, the sheet is cut and stacked, or wound into rolls. Mono and multilayer films upto 150 micro thickness are used to manufacture plain and embossed film rolls to make stationery files of different types. There lies tremendous opportunities' considering the ever increasing demand for high value products of such kind.

Normally, 2 layer comprises of Homopolymer & Copolymer of PP having closer MFI values. The machine can also process very thin second layer of material having higher sealing properties. By having this stationery products such as files, folders, box files, computer disk covers etc. can have better bonding between two meeting surfaces.

Sheet lines vary greatly in size, but most of the production occurs within a fairly narrow band, especially for PP Sheet thickness of 0.2 mm to 10 mm are possible, but anything over 6 mm is unusual. Most of the production is near 1 mm which is also the point below which the sheet is rolled and over which it is cut and stacked.

3.3 Quality & Standard

As per customer's specification

3.4 Machinery & Equipment

Sr. No.	Description of machines	Qty.(Nos.)	(Rs.)
I	Production Unit		
1	Extrusion Machine Cap		30,00,000.00
2	Cooling Tower		1,00,000.00
3	Scrap Grinder		1,00,000.00
4	Screen Printing Machine		70,00,000.00
5	Others		2,00,000.00
6		**Total cost**	**34,70,000.00**
		Or say	35,00,000.00

3.5 Raw Materials

Sr. No.	**Description** (Per Month)	Qty. (M.T.)	Rate Rs./M.T	(Rs.)
1.	Polypropylene Granules	16.00	70,000	11,20,000.00

3.6 Land & Building

Sr. No.	Description	Area sq. mtrs	Rate Rs. per Sq. mtr	(Rs.)
1.	Land	200	1000	2,00,000.00
II	Building	70	3500	2,45,000.00
			Total	4,45,000.00

3.7 Total Power Requirement

Total connected load (KW) : 200

3.8 Manpower Requirement (Per Month)

Sr. No.	Designation	Nos.	Salary (rs.0	Rs.
1.	Production Engineer/Manager	01	10,000.00	10,000.00
2	Sales Executive	01	5,000.00	5,000.00
3	Accountant-cum-Store Keeper	01	4,000.00	4,000.00
4	Watchman	02	3,000.00	6,000.00
5	Skilled Workers	02	3,500.00	7,000.00
6	Helpers	03	3,000.00	9,000.00
7				41,000.00
8	Add perquisite @ 10% of the Salary			4,100.00
9	Total:			45,100.00

4.0 TOTAL PROJECT COST(Rs.)

Sr. No.	Description	Rs.
1.	Fixed Capital	39,45,000.00
II.	Working Capital for 3 months	10,00,000.00
	Total	49,45,000.00
	Or Say	50,00,000.00

5.0 INDICATIVE PROFITABILITY

Sr. No.	Description	
1.	Net Profit Ratio	10.00%
II.	Rate of Return	25.00%

6.0 KEY ELEMENTS

1) Proper grade of polypropylene granules should be available.
2) Availability of different products of varying size, dimension etc. should be ensured to increase marketability.

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PROJECT PROFILE
OF
HDPE LUBE OIL CONTAINER 5 LTR. CAP.

1.0 INTRODUCTION

HDPE Containers have emerged as the primary and dominant choice for packaging of the lube oil due to its unique properties. HDPE containers are preferred because of its light weight, good impact strength, ease to handle during transportation, lower rejection as compared to tin containers because of its superior resistance. HDPE Containers are made first and printed later on, which has the advantage in terms of changeover of prints as compared to tin containers, where the sheet is first printed and then fabricated into containers.

2.0 MARKET POTENTIAL

2.1 Demand and Supply

The consumption of lube oil is linked with the growth in the road transport and level of industrial growth. The lube market has been growing at the rate of 8% in the past. The future growth for lube oil is expected to be between 8 to 12% per annum. The demand for HDPE Blow Moulded articles in India is projected at 523 KT by 2010. India has a market of 850 KTA of finished lubricating oil, valued at about Rs. 4,500 Crores, out of this, around 80% contributes to the automotive market. The overall market is expected to grow at the rate of around 4% every year due to the increase in automobiles in market.

2.2 Marketing Stratergy

The entire market was divided among seven players and 91% of the market was covered by Govt. owned oil companies (IOC, HPCL, BPCL & IBP) and the remaining 9% was shared by three private oil companies (Castrol, Gulf & Tidewater). In the unorganised sector, it is estimated a market of around 20 KTA, which are basically refineries. Due to the Liberalisation Programme of the Government, various Transnational Oil

Companies are also likely to enter in the Indian market, like IOC – Mobile, BPCL – Shell, IBP – Caltex and Tide Water – Mitsubishis.

2.3 Basis & Presumptions

(i) The output capacity is taken as 25 Kgs/hr. The unit will work at 20 hrs. per day for 25 working days in a month and 300 days in a year. The output capacity may vary from machinery to machinery and the cost of machinery may also vary from supplier to supplier

(ii) The time period for achieving the full envisaged capacity utilization is si months

(iii) The labor wages are as per the prevailing rates in the market

(iv) The rate of interest for fixed and working capital is taken as 12 per cent

(v) The margin money requirement for this project is 30 per cent

(vi) The payback period of this project is 5 years

(vii) The rate of land is taken @ Rs. 1000/-per sq. mtr. and construction charges are taken @ Rs. 3500 per sq. mtr. This may also vary from place to place

(viii) The present profile has to be updated taking into prevailing cost of land, building, machinery etc. at the time of implementation of the project

3.0 TECHNOLOGY INFRASTRUCTURE

3.1 Production Capacity(Per Annum)

(a)	Quantity (M.T.)	:	70
(b)	Value (Rs.)	:	84,00,000.00

3.2 Manufacturing Process

In a typical Extrusion Blow Moulding process, plastics granules are fed into the hopper of the extruder. These granules travel to the extruder barrel, whereby the granules are heated with the help of electric heaters and homogenised by the screw in the barrel. The plasticized mass is extruded into the tube called parison. The Parison is then inflated into a mould of required form to contact and set up against the cooled walls of

the mould cavity. The following properties of the end product must be ensured during manufacturing:

Uniform Wall thickness

Consistency in weight of moulded product

Uniform colour dispersion throughout article specified dimensional accuracy

3.3 Quality & Standard

The containers may be manufactured as per the standard specification specified by the Oil Companies. The item can also be manufactured as per IS 7394.

3.4_ Machinery & Equipment

Sr. No.	Description of machines	Qty.(Nos.)	(Rs.) (Indicative)
a)	Production Unit		
	1. Extrusion Blow Moulding Machine - 5 ltr. Capacity with all accessories alongwith compressor and cooling tower	1 No.	10,00,000.00
	2. Scrap Grinder	1 No.	75,000.00
b)	Testing Equipment & Other Accessories		50,000.00
c)	Electrification & Installation @ 10% of cost & machinery		1,13,000.00
d)	Pre-operative expenses		50,000.00
	Total cost of machinery & equipment (a to d)		**12,88,000.00**
e)	Cost of Moulds & Dies		75,000.00
f)	Cost of Office Equipment/Furniture/Computers etc		3,00,000.00
		Total:	**16,63,000.00**
		Say	**16,60,000.00**

3.5 Raw Materials

Main raw materials required is HDPE granules (Virgin)

3.6 Land & Building

Sr. No.	Description	Area sq. mtrs	Rate Rs. per Sq. mtr	(Rs.)
1.	Land	100	1000	1,00,000.00
II	Building	60	3500	2,10,000.00
			Total	3,10,000.00

Fixed Capital - (i) + (ii) = Rs. 3,10,000 + Rs. 16,63,000 = 19,70,000.00

3.7 Total Power Requirement

Total connected load (HP/KW) : 55 KW

4.0 TOTAL PROJECT COST (Rs.)

Sr. No.	Description	Rs.
1.	Fixed Capital	19,70,000.00
II.	Working Capital for 3 months	10,00,000.00
	Total	29,70,000.00

5.0 INDICATIVE PROFITABILITY (Per Year)

Sr. No.	Description	
1.	Sales (Rs.) – Cost of Production (Rs.) 84,00,000 - 70,00,000	= Profit (Rs.) =14,00,000
II.	Net Profit Ratio	15 %
	Rate of Return	22 %

5.1 Sales/Turn Over (Per Year)

Sr. No.	Item	Qty.(MT)	Rate (MT)	(Rs.)
1.	HDPE Lube Oil Containers 5 ltrs. Capacity	70	1,00,000	84,00,000.00

6.0 KEY ELEMENTS

3) Proper grade of HDPE granules should be available.
4) Certification and quality standards should be met.
5) Need to develop a good market strategy.

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PROJECT PROFILE
OF
LLDPE ZIPPER BAG

1.0 INTRODUCTION & PRODUCT

PE Zipper bags were introduced in Europe in the '70s called 'minigrip' and a patent covered in all countries protected its production. With the expiry of patent, there are now several manufacturers in South East Asia offering plants of outputs varying from 5 kg/hr. to 30 kg/hr. for assorted size bags in 40 to 50 micro-thickness.

The zipper bags also referred to as magic seal bags have a projection and insertion profile at the top and side sealed on one end,. The red or any other coloured streak line provides identification particularly to distinguish product and sizes of items packed. The zipper bags can be reused several times and protect the items from ingress of moisture, gas and entry by insects.

2.0 MARKET POTENTIAL

2.1 Demand & Supply

The market for zipper bags remains untapped as very few manufacturers are in the business. Zipper bags are used in households and also for packing of food products. The industry also utilize zipper bags for sampling granules of powder products inclusive of colorants, chemicals, cosmetic products, hardware items and medical products. Meghalaya with its increasing urban style of living would be a potential market.

2.3 Basis & Presumptions

The rate of land is taken @ Rs. 1000/-per sq. mtr. and construction charges are taken @ Rs. 3500 per sq. mtr. This may also vary from place to place.

3.0 TECHNICAL INFRASTUCTURE

3.1 Production Capacity(Per Annum)

a.	Quantity (M.T.)	50 x 1.20 lacs
b.	Value (Rs.)	60,00,000.00

3.2 Manufacturing Process

LLDPE or LD/LLDPE granules and colour are fed to an extruder, where they are melted and extruded in the form of tube. This tube is inflated into a bubble which is then collapsed to form a layflat film. Zipper is formed at the time of extrusion stage. Special Zipper closing unit is provided on the take up of frame. The film is then surface treated on a corona treater and then proceeded to a winder. The film roll is brought to a four colour flexo machine, where it is printed using rubber rolls.

The printed film is then converted into bags using a bottom or side seal bag making machine.

3.3 Quality & Standard

The Zipper Bangs are manufactured as per customers' specification.

3.4 Machinery & Equipment

Sr.No.	Description of machines	Qty.(Nos.)	(Rs.)
I	Production Unit		
1	Extrusion Line		20,00,000.00
2	Extruder for making Red Line		15,00,000.00
3	Bag making machine		5,00,000.00
4	Auto Film width Controller		2,00,000.00
5	Testing Equipment & Other Accessories		1,00,000.00
6	Total cost of machinery & equipment		43,00,000.00
7	Cost of Moulds & Dies	L.S.	1,00,000.00
8	Total:		44,00,000.00

3.6 Land & Building

Sr. No.	Description	Area sq. mtrs	Rate Rs. per Sq. mtr	(Rs.)
1.	Land	200	1000	2,00,000.00
II	Building	110	3500	3,85,000.00
			Total	5,85,000.00

3.7 Total Power Requirement

Total connected load (KW) : 58

4.0 TOTAL PROJECT COST

Sr. No.	Description	Rs.
1.	Fixed Capital	49,85,000.00
II.	Working Capital for 1 months	15,00,000.00
	Total	64,85,000.00
	Or say	**65,00,000.00**

5.0 INDICATIVE PROFITABILITY

Sr. No.	Description	
I.	Net Profit Ratio	14.9 %
II	Rate of Return	28.18%

5.1 Sales/Turn Over (Per Year)

Sr. No.	Item	Qty.(MT)	(Rs.)
1.	LLDPE Zipper Bag	50.00	60,00,00,000.00

6.0 KEY ELEMENTS

1) Proper grade of LLDPE should be available.

2) Availability of different products of varying size, dimension etc. should be ensured to increase marketability.

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PROJECT PROFILE
OF
LLDPE AGRICULTURE FILM

1.0 INTRODUCTION

Mulching (Agriculture Film) is the practice of covering the soil around plants to improve the growing conditions for the crop. Historically natural mulches such as straw, compost, hay and wood chippings have been used but over the last 40 years paper and plastics have been tried. Because of its poor wet strength and price, paper has been found less effective and more costly than plastic. The result is that plastic mulch film is the primary choice for agricultural application. With agricultural and horticultural in Meghalaya being major fields this product would have an excellent base.

2.0 PRODUCT

Plastic mulch film is widely used on high value crops, such as tomatoes, melons, cucumbers, squash, peppers, strawberries and increasingly on lower value crops such as corn and potatoes.

Benefits of Plastic Mulch Film

Covering the soil around the plant with plastic film results in the following benefits:

- Moisture retention (particularly valuable in high temperature regions with low rainfall).
- Weed reduction
- Increase in soil temperature
- Less crop contamination
- Less soil compaction
- Improved germination rates

These benefits lead to higher yields (by upto 100% for certain crops) earlier crops(by upto one month) and in some cases the ability to grow certain crop, which would not be possible without the mulch film.

Because of the reduction in weeds, herbicides can be eliminated or at least reduce, which is of particular importance where legislative constraints are being introduced. Pesticides may also be eliminated. The lower soil compaction and greater fertility also allows for a reduction in fertilizer.

3.0MARKET POTENTIAL

3.1 Demand & Supply

To meet the growing needs of the farmers who wish continuously to improve the profitability of their farming by using more efficient materials, the plastics industry has introduced new products into the market.

4.0 TECHNOLOGY INFRASTRUCTURE

4.1 Production Capacity (Per Annum)

a.	Quantity (M.T.)	200 M.T.
b.	Value (Rs.)	2,00,000/- to 2.00 crores

4.2 Manufacturing Process

The manufacturing process used to manufacture LLDPE agricultural film is extrusion. The film thickness range varies between 100-800 gauge and the layflat tubing width of the film varies between 450 mm to 2100 mm (18" to 84").

LLDPE granules are fed to a single screw extruder, where they are melted & pumped out of a die in the form of a tube. This is then inflated such that it takes a shape of a bubble. The bubble formed is collapsed & drawn upwards by two nip rolls. Flattened tube is then wound on a winder.

4.3 Quality & Standard

Agriculture Films are manufactured as per customers' requirement.

4.4 Machinery & Equipment

Sr.No	Description of machines	Qty. (Nos.)	Value (Rs.)
a.	Production Unit		
i.	Extrusion Blown Film Plant (90 mm) capacity	120 kgs./hour	15,00,000.00
ii	Cooling Tower		2,00,000.00
Iii	Compressor		3,00,000.00
b	Testing Equipment & Other Accessories		2,00,000.00
c	Electrification & Installation @ 10% of cost& machinery		2,80,000.00
d	Total cost of machinery & equipment		24,80,000.00
e	Cost of Moulds & Dies		1,00,000.00
f	Cost of Office Equipment/Furniture/Computers etc		1,00,000.00
	Total:		26,80,000.00
	Or Say		27,00,000.00

4.6 Land & Building

Sr. No.	Description	Area sq. mtrs	Rate Rs. per Sq. mtr	(Rs.)
1.	Land	300	1000	3,00,000.00
II	Building	200	3500	7,00,000.00
			Total	10,00,000.00

4.7 Total Power Requirement

Total connected load (KW) : 70

5.0 TOTAL PROJECT COST

Sr. No.	Description	(Rs.)
a.	Fixed Capital	37,00,000.00
B	Working Capital for 1 month	60,00,000.00
C.	Total	97,00,000.00

6.0 INDICATIVE PROFITABILITY(per year)

Sr. No.	Description	
a.	Net Profit Ratio	11.00 %
b.	Rate of Return	25.00%

6.1 Sales/Turn Over (Per Year)

Sr. No.	Item	Qty.(MT)	(MT)Value	(Rs.)
1.	LLDPE Agriculture Film	200 M.T.	1,00,000	6,33,60,000

7.0 KEY ELEMENTS

1. Proper grade of LLDPE granules should be available.

2. Good market potential.

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PROJECT PROFILE
ON
LLDPE PRINTED SHOPPING/CARRY BAGS

1.0 INTRODUCTION

Shopping & Carrier bags have recently become an integral part of retail selling in India. The advantage of these bags is not only the ease with which product can be carried but also in avoiding unnecessary show of items packed. A colorfully printed shopping bag is used for quite a long time and is taken to variety of places. Thus it acts as an advertisement media for the retail trade. With increasing urbanization of Meghalaya, such products would have ready acceptance. Further the state does not have a proper unit manufacturing such bags.

2.0 PRODUCT

Carry bags are being used for local packaging of vegetables, groceries and stationery etc. as well as for shopping and designer bags for large departmental stores.

Blend ratios vary from 10-90% LLDPE in both HD/LLD as well as LD/LLD blends, with thickness varying from 30 microns to 100 microns.

Bags produced are of various sizes, designs and colors depending on the buyers need. Standard sizes being used are:

9" * 13", 10" * 15", 12" * 15", 12" * 18", 13" * 19", 14" * 20",
17" * 21"

The bags produced are of different sizes as well as shapes. Also various types of handles, such as:

"Rasi" handle, Suitcase handle, Suitcase with grip type handle, Half round lock type handle are used, 'D' punch handle

From single colour upto twelve colour printing is possible. Depending on the quantity, rotogravure, flexo or screen printing process is used.

Advantages of LLDPE films –

1. Excellent draw-down ability makes possible to produce thinner films
2. Very high tensile strength
3. Outstanding puncture resistance
4. Very high tear strength
5. Exceptional hot tack, sealability and resistance to ESCR.

The unit should check out prevailing regulations about production and usage of plastic bags in the state. These rules / guidelines would have must be followed.

3.0 MARKET POTENTIAL

3.1 Demand & Supply

There is good demand for shopping bags in Meghalaya view of opening of New Malls, Garments Shops, Grocery Shops, General Stores, Vegetable Shops, Sweet Shops etc. Depending upon the end products shopping bags of small and big sizes are made with aesthetic appeal. Good quality printed bags are also made for the customers especially for jewellery, cosmetics etc. with bright and attractive works. Shopping bags/carry bags have huge demand for all purpose which has replaced paper bags without harming ecology.

3.2 Basis & Presumptions

(i) The output capacity is taken as 150 Kgs/hr. The unit will work at 20 hrs. per day for 25 working days in a month and 300 days in a year. The output capacity may vary from machinery to machinery and the cost of machinery may also vary from supplier to supplier. (9.00 lacs)

(ii) The time period for achieving the full envisaged capacity utilization is six months

(iii) The labour wages are as per the prevailing rates in the market

(iv) The rate of interest for fixed and working capital is taken as 12 per cent

(v) The margin money requirement for this project is 30 per cent

(vi) The pay back period of this project is 5 years

(vii) The rate of land is taken @ Rs. 1000/-per sq. mtr. and construction charges are taken @ Rs. 3500 per sq. mtr. This may also vary from place to place.

(viii) The present profile has to be updated taking into prevailing cost of land, building, machinery etc. at the time of implementation of the project

4.0 TECHNOLOGY INFRASTRUCTURE

4.1 Production Capacity(Per Annum)

A	Quantity (M.T.)	900.00
B	Value (Rs.)	85,00,00,000.00

4.2 Manufacturing Process

LLDPE or LD/LLDPE granules and colour are fed to an extruder, where they are melted and extruded in the form of tube. This tube is inflated into a bubble which is then collapsed to form a layflat film. The film is then surface treated on a corona treater and then proceeded to a winder. The film roll is brought to a four colour flexo machine, where it is printed using rubber rolls.

The printed film is then converted into bags using a bottom or side seal bag making machine. The required handle is then attached to the bag.

4.3 Quality & Standard

The containers may be manufactured as per the standard specification specified by the Oil Companies.

4.4 Raw Materials

The main raw material is Linear Low Density Polythylene(LLDPE). This should be of appropriate grade for manufacture of carry bags. LLDPE is easily available. Other raw materials would include additives, plasticizers and stabilizers.

4.5 Machinery & Equipment

Sr. No.	Description of machines	Qty.(Nos.)	Rs.
A.	Production Unit		
i.	Extrusion Blow Film Plant	01	30,00,000.00
ii.	Printing machine	02	10,00,000.00
iii.	Bag making machine	03	15,00,000.00
iv.	Others		10,00,000.00
	Total		**55,00,000.00**

4.6 Land & Building

Sr. No.	Description	Area sq. mtrs	Rate Rs. per Sq. mtr	(Rs.)
1.	Land	300	1000	3,00,000.00
II	Building	150	3500	5,25,000.00
			Total	8,25,000.00

4.7 Total Power Requirement

Total connected load (KW) : 215

4.5 Manpower Requirements

The unit would require total manpower of 7 persons.

5.0 TOTAL PROJECT COST

Sr. No.	Description	Rs.
1.	Fixed Capital	63,25,000.00
II	Working Capital margin for 1 month	20,00,000.00
	Total	83,25,000.00
	Or Say	83,00,000.00

6.0 NET PROFIT (Per year)

Sr. No.	Description	
1.	Sales (Rs.) – Cost of Production (Rs.) 8,55,00,000 -	= Profit (Rs.) =30,00,000.00
II.	Net Profit Ratio	8.00%
	Rate of Return	18.00%

7.0 KEY ELEMENTS

1. Proper grade of LLDPE should be available.

2. Availability of different products of varying pattern, size, dimension etc. should be ensured to increase marketability.

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PROJECT PROFILE
ON
TOURIST VILLAGE

1.0 INTRODUCTION

Meghalaya is a reasonably popular tourist destination, which attracts nearly 7 lac tourists every year. The attractions are both – physical features and culture. However, it is physical features – scenic beauty, rivers, streams, lakes, waterfalls, gorges, caves – which presently are the main driver. The cultural attractions do reinforce tourist appeal but are not strongly packaged or offered. It is for a discerning tourist to seek these out.

We recommend establishment of a Tourist Village, on the outskirts of Shillong,

- ✓ To showcase cultural offerings of Meghalaya
- ✓ To provide a convenient, under – a – single – roof, cultural experience to tourists
- ✓ To increase tourist stay – length by half a day to one day
- ✓ To provide business opportunities to individual entrepreneurs

2.0 CONCEPT

The Tourist Village will be developed over an area of 15000 to 30000 sq. mtrs. The Village will consist of

- ✓ Individual spaces, built in the traditional local architectural style, of three sizes
  - ❖ 150 sq. mtrs
  - ❖ 250 sq. mtrs
  - ❖ 500 sq. mtrs
- ✓ Public conveniences
- ✓ Public art depicting Meghalaya traditions

The individual built spaces will offer cultural experiences in a commercial format. These are

- ✓ Handcraft
- ✓ Souvenir
- ✓ Cuisine
- ✓ Beverages

- ✓ Indigenous sport
- ✓ Local herbs
- ✓ Local fruits
- ✓ Other local attractions

On the whole, there will be 25 to 30 individual outlets.

The Village will offer mini, short – duration local dance performances (solo or group) music performances and such other attractions to enrich the tourist experience and to promote the Village.

Handicraft Outlets

The main crafts are

- ✓ Handwoven textiles, particularly shawls and scarves of traditional design
- ✓ Pottery
- ✓ Basketry
- ✓ Wood carving
- ✓ Stone carving
- ✓ Metal work

There is scope for five to seven outlets in the Village to sell these crafts.

Souvenirs

There is a wide range of souvenir products which can bear Meghalaya icons or symbols – mugs, tee shirts, coasters, key chains, fridge magnets, caps, hats, pens, erasers, etc. The present official tourism logo of the state does not appear so attractive in the context of souvenir sale. It will be useful, if attractive elements from Meghalaya ecology and culture are culled out for incorporation in souvenirs. There is scope for 2 to 3 outlets.

Cuisine

A variety of rice dishes, pork, rice cakes (putharo), flaky preparation from rice flour (pumaloi), jaggery sweetened rice preparation (pukhlein) and steamed rice flour dish (pulsa), fish dishes cooked wrapped in leaves or fresh bamboo cylinders, sundried fish and meat or smoked one, mushrooms, chutneys from herbs and fermented soyabean and betelnut and betel leaft are the visible elements of local cuisine. Around the local cuisine, there is scope for

- ✓ An indoor cum open air restaurant

- ✓ Three kiosks to sell snacks and quick meals
- ✓ A betel leaf outlet

Beverages

There is local rice beer. (There might be other local alcoholic drinks). There is scope for a local drink pub, which can be designed in the traditional style. The pub will also stock non – local drinks.

The state grows tea as well as coffee. A tea / coffee beverage outlet offering local as well as other varieties, would generate business.

Local Produce Outlets

The local produce of interest to tourists is

- ✓ Ginger (dried)
- ✓ Turmeric
- ✓ Tea
- ✓ Coffee
- ✓ Black pepper
- ✓ Cashew nut
- ✓ Areca nut
- ✓ Mustard seed
- ✓ Rapeseed
- ✓ Mushroom

We envisage scope for three to five outlets to sell these. The outlets will provide relevant and interesting information on areas / people who grow these and highlight organic character, where applicable.

Local Jewellery Outlet

There is excellent scope for selling local jewellery. It will have to be selected for wider aesthetic appeal. We suggest two outlets.

Flowers, Fruits Honey and Butterflies

The region grows an exciting verity of flowers, orchids being the flagship one. These can be sold in fresh as well as dried forms. There are fresh fruits – pineapple, plum, peach,

pair, jackfruit, banana. There is local honey. There are 250 species of butterflies; the dead ones can be collected and sold.

There is potential for three to five outlets.

Local Sport

Archery is a local sport. The visitor can be oriented on the spot and offered this recreation (are there other sports amenable to the Village)?

3.0 MARKET POTENTIAL

As mentioned earlier Meghalaya has excellent tourism potential. Large numbers of tourists visit the state every year. These tourists are also looking for local items, craftsmanship and food at one location when they visit tourist places. Further not only tourists but also local people look for such common place. A well-developed Tourist Village would offer such opportunity and would have good market potential.

STATISTICAL DATA OF DOMESTIC AND FOREIGN TOURISTS VISITING MEGHALAYA

Year	Domestic	Foreign	Total
1	2	3	4
2000	169929	2327	172256
2001	178697	2390	181087
2002	268529	3191	271720
2003	371953	6304	378257
2004	433495	12407	445902
2005	375911	5099	381010
2006	400287	4259	404546
2007	457685	5267	462952
2008	549954	4919	554873
2009	591398	4522	595920
2010	652756	4177	656933
2011	667504	4803	672307

(There is no available data district-wise)

Source: Directorate of Tourism, Meghalaya

4.00 BUSINESS MODEL

The state government, will locate and acquire site and develop essential facilities - built spaces for individual kiosks, public conveniences, public art, power, water, drainage,

street lighting, landscaping, signage, admin block, approach road, etc. The individual entrepreneurs will make an upfront payment to acquire built up kiosk or space.

Security, upkeep of common areas and facilities, visitor flow management, publicity and promotion for the village will be the responsibility of the state tourist authority. The entrepreneurs will pay an annual charge to meet the cost of common management. They will have freedom to promote their own business. In fact, they will have considerable freedom and flexibility in the choice of business as well as its operation to reduce dependence on the government.

5.0 COST OF PROJECT & MEANS OF FINANCE

Following is assumed

- Cost of Project for Government:
  - Land: 15000 to20000 sq.mtrs. (Govt land)
  - Site development & Common infrastructure : Rs. 50.00 lacs
- Cost of Project for Individual participant: Rs.15.00 lacs apprx.(Includes cost of land, building, basic interiors and equipment and working capital)
- Tourism dept., Govt. of Meghalaya would offer available incentives. Further banks would also give loans. Own contribution could be apprx. Rs. 3.00 to 4.00 lacs.

6.0 PROFITABILITY

- Turnover for each of the participant estimated on average@ Rs.25 to 30 lacs p.a
- Profitability: Average rs.2.50 to 3.00 lacs p.a.

7.0 KEY ELEMENTS

- This is a public Private Partnership(PPP) kind of project
- Formation of a group of entrepreneurs to book in the proposed Tourist village would make it smoother and cost effective
- Location is important
- Availability of land at the location
- The project must comply with relevant norms of Govt. of Meghalaya

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PROJECT PROFILE
ON
SPA SERVICES

1.0 INTRODUCTION

Meghalaya receives 7 lac tourists per year. In addition, there is some same day return business – cum – leisure purpose flow from nearby locations in north east. There is local population interested in wellness and relaxation. Keeping these in view, there is scope for promotion of a string of spas in Meghalaya. The north east residents possess essential spa – skills as also flair for acquiring such skills. This lends special edge to the case for promotion of spas in Meghalaya.

2.0 CONCEPT

There is the wider and holistic concept of wellness whose popularity has grown in recent years. It consists of

- ✓ Complementary & Alternative Medicine
- ✓ Healthy Eating / Nutrition & Weight Loss
- ✓ Workplace Wellness
- ✓ Preventive / Personalized Health
- ✓ Fitness & Mind – Body
- ✓ Beauty & Anti - Aging
- ✓ There are the following types of spa in India.

A spa, depending on its character delivers some or most of the above. This depends on the type of spa. The spas are of the following type.

Day Spa – A clean safe and nurturing environment offering a menu of spa treatments administered by trained professionals. It can be a self-contained facility, but is often found in a full service salon, hotel lobby or shopping centre location. Treatments can last for 1 hour or all day.

Destination Spa – A place where guests participate in a variety of exclusively structured programs, including, weight loss, nutrition, fitness regime, healing, mediation, yoga and all the pampering the spa experience offers. A total renewal of the mind, body and sprit is offered at the destination spa.

Ayurvedic Spa – This is based in ancient Indian practice of traditional medicine, includes nutrition, herbal therapy, aromatherapy, massage and meditation.

Eco-Spa – Eco-spas offer all the luxuries of a traditional spa but use of chemical and processed elements is limited. The emphasis is on natural elements.

Resort Spa – A spa facility at a resort, where guests who enjoy the spa concept take advantage of traditional resort activities. Here guests can combine vacations along with the amenities the modern spa has to offer. The resort spas are often located close to a tourist destination.

Medical Spa – Spas that concentrate on wellness, preventive healthcare and cosmetic procedures along with innovative treatments. There is usually a Medical Director overseeing all treatments in tandem with Medical Doctors of various disciplines, e.g. complementary and alternative medicine, dermatology, plastic surgery.

3.0 MARKET

As mentioned earlier, Meghalaya is now a well desired tourist location. A large number of tourists visit Meghalaya round the year. Further one also has to consider local and day time tourists. All of these constitute a major market segment for services such as SPA and allied.

4.0 COST OF PROJECT AND MEANS OF FINANCE

We propose day spa, which will offer following services:

1. Massage (Ayurvedic, Balinese, Western, Thai, reflexology)
2. Body scrubs / wraps (coco butter, almond honey, natural fruit, etc.)
3. Face

4. Body / skin
5. Pedicure / manicure
6. Other treatments

The promoter can rent out space in a hotel, resort, shopping centre shopping mall or a quiet / pleasant residential neighbourhood. Alternatively, he can build a small unit – gross built up area of 500 to 700 sq.ft – at a scenic location e.g, riverfront, waterfall, which normally attracts large volume of visitor flow.

Reliable water supply, drainage and electricity are essential. The unit will consist of two spa rooms, a lounge and a rest room facility.

The other investment will be

- Hard furniture / soft furnishing
- Air conditioner / refrigerator / tea – coffee / maker / water purifier
- Artefacts / music system

The annual operating expenses, given above scale of operation will be (Rs in lacs)

- Rent - Rs. 1.50
- Electricity- Rs 0.50 (10,000 units of electricity year)
- Water supply- Rs 0.10
- Oil, herbs, towels, laundry- Rs. 1.50 consumables
- Manpower- Rs 4.50
  - Therapists (2)
  - Reception (1)
  - Housekeeping (1)
- Total Operating Expense - 8.10 lacs

Banks and Tourism Department of Meghalaya could be potential sources for finance.

Location

The centre will be located on the outskirts of Shillong or at any other scenic location. A view of the hills, forest or water body will be desirable. Hot springs have positive effect on health and so location at Resu (East Garo Hills) or Jarkem (west khasi Hills) is attractive, if some of the hot water is allowed to be pumped into the Centre.

5.0 PROFITABILITY

Depending on the location / season / popularity, we expect 6 to 12 customers per day; say, an average of 9 customers / day or 3000 customers / per year. We estimate an income @ Rs 500 / hour (per customer). Hence, an annual gross income of Rs 15 lacs.

We expect 6% to 7% income from other sources – sale of hot / cold beverage, incense, candles, herbs, etc. Thus, gross income will be Rs 16 lacs.

- ❖ Profit Before Interest Depreciation And Tax estimated @ 5.00 lacs

6.0 KEY ELEMENTS

- o Location is important
- o Availability of land at the location
- o Skilled manpower
- o As per latest policy of Tourism Department of Meghalaya, projects such as SPA are encouraged in Meghalaya. Accordingly support financial and other could be available.