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SLUP

(STATE LEVEL UPGRADATION PLAN)

for

ZUNHEBOTO DISTRICT
IN THE STATE OF NAGALAND

Prepared by

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Executive Summary

In the Zunheboto district, major crops cultivated are Soybean, Maize, paddy, Rapeseed mustard, Rajma, Large cardamom, Banana, passion fruit, Leafy vegetable, and Tapioca.

In 2019-20, the total area under the crops in the district is 49.5 thousand ha with the production of 165.6 thousand tons. Major crops like pulses, cereals, and oil seeds are cultivated in the area of 42.2 thousand ha with a production of 100.4 thousand tons. Fruit crops and vegetable crops are cultivated in the area of 2.4 thousand ha and 3.6 thousand ha with the production of 24.8 thousand tons and 34.02 thousand tons respectively. Spice crops are cultivated in an area of 1.2 thousand ha with a production of 6.34 thousand tons. Maize, Jhum paddy, and soybean are the major crops in the district that are cultivated in the area of 10.1 thousand ha, 9.2 thousand ha, and 7.6 thousand ha with the production of 20.0 thousand tons, 18.3 thousand tons, and 9.8 thousand tons respectively.

In the Nagaland state, the Soybean crop is cultivated in the area of 25.7 thousand ha with a production of 31.7 thousand tons. Zunheboto district contributes 30.5% of the total soybean crop area with the production of 30.9% of the total crop production in the state.

Soybean is the ODOP of the Zunheboto district and the Coffee-based products, Kiwi-based products, pickle-based products (Meat pickle, Gooseberry pickle, Fish Pickle, Lime pickle) bakery-based products, and banana-based products are the potential enterprises in the district. 21 enterprises are surveyed in the district involved in the primary processing of the soybean crop. Traders and farmers are drying, sorting, grading, and packaging the products and selling them to the local retailers and wholesalers in the other district. It is estimated that there are 240 to 260 food processing enterprises in the district and approximately 700 to 800 employees working in the food processing enterprises in the district.

Cluster- All the food processing enterprises are scattered in the district and were located in the villages like Lumami, Satoi, Kawoto, Satami, Akuluto, Aichisaghemi, Tichipami, Netoi village, Xuivi, Hebolimi, Phishumi, Sukomi, etc. majority of the food processing enterprises in the district are operating in the household level and micro-enterprise level.

Based on the primary observation of micro and small enterprises the major bottlenecks identified and recommendations/ Insights are briefed below-.

1. Lack of proper machinery for processing: None of the enterprises processing the soybean crop in the district are using advanced machinery and types of equipment. All the units in the district are manually processing the soybean in the traditional method without the usage of machinery and equipment. It is estimated that approximately only 10 to 15 tons of the total 9,810 tons of the crop produced in the district is processed into soybean flour and the remaining crop is exported to other districts and other states. The majority of the households in the district consume the crop for household purposes. It is proposed to provide machinery like Dryer, sorting and grading machine, soybean soaking, and washing machine, Grinding and separating machine, Soymilk twin filter machine, packaging machine,

homogenizer, and soy milk bottling machine at subsidized prices under the PMFME scheme for processing, soybean flour, soy milk, and soya chunks.

2. Lack of common infrastructure facilities-It was observed that there are no common infrastructure facilities like cold storage, warehouses, and pack houses for the primary processing and secondary processing in the district. Due to the lack of proper transportation facilities in the district, there is a considerable loss in crop quality post-harvesting. To minimize the post-harvest losses of agricultural commodities and to increase the shelf life of the processed commodities, it is suggested to establish common facilities like reefer vans, cold storage structures, and pack houses in the district headquarters.

3. Incubation center- From the primary survey, it is observed that approximately 98 new entrepreneurs (Individual and Group units) are interested in the food processing sector but unable to due to a lack of proper guidance and facilities in the food processing sector in the district. We are proposing one incubation center in the district with common processing facilities with 3-4 processing lines (Coffee processing, Kiwi fruit processing, Pickle based products).

4. Lack of marketing facilities-Soybean crop grown in the Nagaland state is known for their organic cultivation and the Zunheboto district is the largest producer of the soybean crop in the Nagaland state. Farmers and traders are selling the primarily processed soybean crop to the local traders and consumers without the brand. To overcome the problem and to support the processing enterprises in the district, it is proposed to create strong marketing linkages for the food processing enterprises in the district. A strong brand can be created for the soybean crop which is known for its organic cultivation. A fund of 1.2 cr. is proposed in the budget to create the brand and marketing linkages for the products in the district.

5. Lack of skilled labor: From the primary survey it is observed that none of the employees working in the food processing enterprises received training related to food processing. It is observed that there are no training facilities available for the food processing enterprises in the district. It is proposed to provide training to the employees working in the existing enterprises and to the potential entrepreneurs on handling the machinery and equipment, standardized process of processing the soya milk, soya chunks, and soya flour, packaging practices, and training on branding and marketing of the processed products. A fund of 12 lakhs is proposed under the PMFME scheme for training the employees in the food processing enterprises in the district.

6. Lack of testing facilities: From the primary survey it is observed that the majority of the enterprises in the district are selling the product without the FSSAI registration. There is no food testing lab in the district. It is proposed to establish a food testing lab in the proposed incubation center in the district.

Proposed fund allocation:

A total of INR 25 Cr. fund is proposed for the Zunheboto district for the up-gradation of 119 enterprises (Existing and new enterprises) in the district. Among the total fund, INR 15.35 Cr. fund is proposed to upgrade the 108 individual units and 1.53 Cr. fund is proposed to upgrade the 11 groups in the district. It

is proposed to establish one incubation center and one common infrastructure in the district. INR 1.25 Cr. and 0.12 Cr. fund is proposed for the branding and marketing and, training and mentorship for the existing and new potential processing enterprises in the district respectively.

Intervention	Target	Amount (Cr.)
Capital investment in plant and machinery (Individual units)	To upgrade and scale up in the production process for 108 Micro Units (The average fund required per unit is 14.2 lakh)	15.35
Capital investment in plant and machinery (Group units)	To upgrade and scale up the production process for 11 Groups (The average fund required per unit is 14.2 lakh)	1.53
Incubation center	One incubation center (IC) is proposed for the district. Cost per IC 2.75 Cr.	2.75
Common infrastructure	One common infrastructure facility (CIF) is proposed for the district. Cost for the CIF 4.0 Cr.	4
Branding and Marketing	Common Branding and Marketing for both Individual units and Groups	1.25
Training and Mentorship	Training and Mentoring for Entrepreneurship. Training on New Technology for a total of 119 individuals. (2 people to be trained from each enterprise/group)	0.12
Total		**25**

Proposed Government assistance under the SLUP:

A total of INR 25 Cr. fund is proposed for the Zunheboto district for the up-gradation of 119 enterprises (Existing and new enterprises) in the district. INR 10.77 Cr. is expected government assistance under the SLUP from the total fund proposed for the up-gradation of the food processing units.

Proposed Government assistance under the SLUP					
Intervention	Target No. of units	Project cost per unit (Cr.)	Total Cost (Cr.)	Subsidy per unit	Govt. assistance (Cr.)
Capital Investment in Plant and Machinery (Individual units)	108	0.14	15.35	35%	5.38
Capital Investment in Plant and Machinery (FPO/SHG/ Cooperatives)	11	0.14	1.53	35%	0.53
Common Infrastructure	1	4	4	35%	1.40
Incubation Cum Custom Hiring Centre	1	2.75	2.75	100%	2.75
Branding and Marketing (Total no. of Units/group)	119	0.010	1.2	50%	0.6
Training and Mentorship (No. of the	119	0.00010	0.12	100%	0.12

Proposed Government assistance under the SLUP					
Intervention	Target No. of units	Project cost per unit (Cr.)	Total Cost (Cr.)	Subsidy per unit	Govt. assistance (Cr.)
individual)					
Total			**25.00**		**10.77**

By 2025, with the support of the PMFME scheme, the processing percentage of respective commodities processing may go up. Nearly, 500 to 650 new employments will be generated, the income level of micro and small entrepreneurs may increase by 10% to 20% (approximately), better price realization can be captured for processed commodities, and local products may reach different parts of India as well as the World.

Project Methodology

This chapter explains the study area, sampling techniques, and different tools and techniques used for analyzing the collected data. The methodology adopted for the present study is presented in the following sections.

1) Study area
2) Sampling Technique adopted
3) Nature and sources of data
4) Analytical tools and techniques used

Study Area

The study on State Level Up-gradation Plan is conducted in the entire Zunheboto district of Nagaland state of India.

Sampling Technique and Sample Size adopted

Sampling Technique - Multistage random sampling technique was adopted.

Sample Size

The sample size in the Zunheboto district is 21 Soybean processing units in the district.

Nature and sources of data

Both primary and secondary sources of data are collected for this study.

Primary Data

India is one of the leading countries in Soybean production. The survey was conducted in various Soybean processing units located in the Zunheboto district. In the process of the primary survey, we met different registered and unregistered processing enterprises, farmers, agriculture department officials, horticulture department officials, raw material suppliers, laborers, district industries center officials, farmer producer organizations, retailers, logistics officials concerned, etc., and gathered the necessary information like the availability of raw materials, year on year production, problems issues faced by the processing enterprises, production process and the technology adopted by unit holders, availability of skilled labor and their wages, range of products, value chain, the testing methodology adopted by them, packaging, marketing, exports and other information from them.

Secondary Data

The secondary data is collected from various sources like DICGS annual report, Nagaland Statistical Handbook, APEDA, Indiastat.com, NIFTEM and IIFPT reports, Journals and articles, and other internet sources to know the area, production, export, import of Soybean

Analytical tools and techniques used

Tabulation of Collected Data, Percentage Analysis, and Graphical Solutions was used to get a comprehensive picture and analysis of the Data. After the data has been collected, it has been interpreted and presented to arrive at conclusions.

1. Baseline Assessment studies:

Zunheboto district is 150 Km away from the state capital and is bounded by Mokokchung on the North, Tuensang district on the East, Phek district on the South, and Wokha on the West. The total area of the Zunheboto district is 1225 Sq Km. Like most of the districts of Nagaland state, it is situated on the Hills with its mountain ranges spread from northeast to Southwest. The hills vary from 1000 to 2500 meters and the average height of the district is 1800 meters. Most people live between 1500 and 2500 meters altitude.

Zunheboto is the district headquarters that lies at an altitude of 1874.22 meters above sea level. It also has six sub-divisions- Akuloto, Satakha, Atoizu, Aghunato, Suruhuto and Pughoboto. The total population of the district is 1,41,014. The density of the population is 112 persons per sq. km. and the sex ratio is 981 females per 1000 males (2011 census). The literacy rate is 86.26 % of the population, and the literacy rate of males and females is 88.86 % and 83.61% respectively.

Demographics

According to the 2011 census Zunheboto district has a population of 1,41,014. Zunheboto has a sex ratio of 981 females for every 1000 males, and a literacy rate of 86.26 %.

Table 1: Demographics of the district

Demographic Label	Value
Area	1,255 Sq. Km
No. of Blocks	8
No. of Administrative Centre	14
No. of Villages	180 (2014 VLDI Report)
Coordinates	25.96667 Degree North.94.51667 Degree East.
Elevation	1.852M (6.076 ft)
Density	122 km per Sq.
Official Language	English and Sumi
Time Zone	IST (UTC+5:30)
Average Rainfall	33.8mm/ 13.142 inch
Average Climate	Summer- 80-90 Degree F(27-32 Degree C) Winter – 46.4 Degree F (8.1 Degree C)

A. Agriculture Profiling of the Districts in the State

In 2019-20, the total area under the crops in the districts is 49.5 thousand ha with the production of 165.6 thousand tons. Major crops like pulses, cereals, and oil seeds are cultivated in the area of 42.2 thousand ha with a production of 100.4 thousand tons. Fruit crops and vegetable crops are cultivated in the area of 2.4 thousand ha and 3.6 thousand ha with the production of 24.8 thousand tons and 34.2 thousand tons respectively. Spice crops are cultivated in the area of 1.21 thousand ha with a production of 6.34 thousand tons.

Maize, Jhum paddy, and Soybean are the major pulses and cereals crops cultivated in the area of 10.1 thousand ha, 9.2 thousand ha, and 7.6 thousand ha with the production of 20.03 thousand tons, 18.3 thousand tons, and 9.8 thousand tons respectively. Banana and Passion fruit is the major fruit crops cultivated in the area of 0.62 thousand ha and 0.57 thousand ha with the production of 8.8 thousand tons and 1.2 thousand tons respectively. Leafy vegetables and Tapioca are the major vegetable crop cultivated in the area of 0.53 thousand ha and 0.51 thousand ha with the production of 4.32 thousand tons and 9.24 thousand tons respectively. Large cardamom and Ginger are the major spice crop cultivated in the area of 0.72 thousand ha and 0.35 ha with the production of 0.46 thousand tons and 4.92 thousand tons respectively.

ODOP

i. Total production of the produce in the district

Area and Production of Pulses, Cereals, and Oil seed crops in the district

In 2019-20, the total area under the major crops like pulses, cereals, and oil seeds in the district is 42,282 ha with a production of 1,00,436 tons. Major crops cultivated in the district are Maize, Jhum paddy, Soybean, and WTRC paddy in the area of 10,110 ha, 9,210 ha, 7,668 ha, and 5.760 ha with the production of 20,030 tons, 18,337 tons, 9,810 tons and 16,641 tons respectively.

Table 2: Area and Production of the pulses, cereals, and oil seed crops in the district

S. No	Crops	Area (Ha)	% Share	Production (MT)	% Share
1	Maize	10,110	23.9%	20,030	19.9%
2	Jhum Paddy	9,210	21.8%	18,337	18.3%
3	**Soybean**	**7,668**	**18.1%**	**9,810**	**9.8%**
4	WTRC Paddy	5,760	13.6%	16,641	16.6%
5	Rapeseed Mustard	2,122	5.0%	2,151	2.1%
6	Rajma/Kholar	942	2.2%	1,196	1.2%
7	Small Millet	821	1.9%	931	0.9%
8	Pea	601	1.4%	662	0.7%
9	Ricebean/Nagadal	480	1.1%	553	0.6%
10	Colocasia	432	1.0%	4125	4.1%

Table 2: Area and Production of the pulses, cereals, and oil seed crops in the district					
S. No	Crops	Area (Ha)	% Share	Production (MT)	% Share
11	Wheat	321	0.8%	582	0.6%
12	Ginger	305	0.7%	2782	2.8%
13	Tur/Arhar	280	0.7%	260	0.3%
14	Linseed	280	0.7%	230	0.2%
15	Lentil	264	0.6%	220	0.2%
16	Sugarcane	241	0.6%	10464	10.4%
17	Potato	240	0.6%	2407	2.4%
18	Perilla	224	0.5%	133	0.1%
19	Mesta	213	0.5%	235	0.2%
20	Tapioca	211	0.5%	4251	4.2%
21	Sweet potato	194	0.5%	1646	1.6%
22	Beans	190	0.4%	259	0.3%
23	Yam	185	0.4%	1352	1.3%
24	Sesamum	152	0.4%	92	0.1%
25	Groundnut	135	0.3%	145	0.1%
26	Jobstear	121	0.3%	121	0.1%
27	sun-flower	80	0.2%	70	0.1%
28	Tea Green	80	0.2%	361	0.4%
29	Bajra	60	0.1%	60	0.1%
30	Gram	60	0.1%	50	0.0%
31	Black gram	60	0.1%	50	0.0%
32	Jowar	50	0.1%	50	0.0%
33	Barley	50	0.1%	50	0.0%
34	Urd/Moong	40	0.1%	40	0.0%
35	Horsegram	40	0.1%	40	0.0%
36	Oats	30	0.1%	30	0.0%
37	Castor	30	0.1%	20	0.0%
	Total	**42,282**	**100.0%**	**1,00,436**	**100.0%**
Source: Department of Agriculture and Horticulture Nagaland					

Area and Production of the fruit crops in the district

In 2019-20, the total area under the fruit crops in the district is 2,446 ha with a production of 24,811 tons. Major fruit crops cultivated in the district are Banana, Passion fruit, and Mandarin in the area of 620 ha, 570 ha, and 409 ha with the production of 8,880 tons, 1,291 tons, and 3,250 tons respectively.

Table 3: Area and Production of the fruit crops in the district					
S. No	Fruit crops	Area (Ha)	% Share	Production (MT)	% Share
1	Banana	620.00	25.3%	8880.00	35.8%
2	Passion Fruit	570.00	23.3%	1291.00	5.2%
3	Kinnow/Mandarin Orange	409.00	16.7%	3250.00	13.1%
4	Pineapple	360.00	14.7%	6790	27.4%
5	Papaya	105.00	4.3%	1610.00	6.5%
6	Kiwi	96.00	3.9%	891.00	3.6%
7	Guava	55.00	2.2%	450.00	1.8%
8	Mango	38.00	1.6%	105.00	0.4%
9	Peach	35.00	1.4%	280.00	1.1%
10	Litchi	33.00	1.3%	165.00	0.7%
11	Plum	28.00	1.1%	220.00	0.9%
12	Pear	25.00	1.0%	260.00	1.0%
13	Apple	24.00	1.0%	61.00	0.2%
14	Aonla/Gooseberry	21.00	0.9%	265.00	1.1%
15	Watermelon	15.00	0.6%	97.50	0.4%
16	Jackfruit	7.00	0.3%	153.00	0.6%
17	Sweet Orange/Mosambi	5.00	0.2%	43.00	0.2%
	Total	**2446.00**	**100.0%**	**24811.50**	**100.0%**
Source: Department of Agriculture and Horticulture Nagaland					

Area and Production of vegetable crops in the district

In 2019-20, vegetable crops are cultivated in the area of 3,630 ha with the production of 34,026 tons in the district. Major vegetable crops cultivated in the district are Leafy vegetables, Tapioca, and Cabbage in the area of 537 ha, 512 ha, and 500 ha with the production of 4,320 tons, 9,247 tons, and 1,014 tons respectively.

Table 4: Area and Production of the vegetable crops in the district					
S. No	Vegetable crops	Area (Ha)	% Share	Production (MT)	% Share
1	Leafy Vegetables (Amaranths, Kashmiri Sag, Spinach, Celery, etc.)	537.00	14.8%	4,320.50	12.7%
2	Tapioca	512.00	14.1%	9,247.00	27.2%
3	Cabbage	500.00	13.8%	1,014.00	3.0%
4	Arbi/Colocasia	420.00	11.6%	5,041.50	14.8%
5	Potato	387.00	10.7%	4,645.00	13.7%
6	Green chilly	342.00	9.4%	2,421.00	7.1%
7	Tomato	251.00	6.9%	1,806.00	5.3%
8	Beans (All Including Lab-lab)	147.00	4.0%	1,215.00	3.6%
9	Peas (Green)	127.00	3.5%	665.00	2.0%

Table 4: Area and Production of the vegetable crops in the district					
S. No	Vegetable crops	Area (Ha)	% Share	Production (MT)	% Share
10	Kaddu/Pumpkin	71.00	2.0%	716.00	2.1%
11	Onion	55.00	1.5%	495.00	1.5%
12	Carrot	45.00	1.2%	540.00	1.6%
13	Brinjal	41.00	1.1%	301.00	0.9%
14	Cucumber	39.00	1.1%	285.00	0.8%
15	Cauliflower	35.00	1.0%	335.00	1.0%
16	Radish	35.00	1.0%	380.00	1.1%
17	Bottle gourd	22.00	0.6%	179.50	0.5%
18	Bitter Gourd	21.00	0.6%	96.00	0.3%
19	Okra/Ladies Finger	18.00	0.5%	85.00	0.2%
20	Ash Gourd/Petha	15.00	0.4%	225.00	0.7%
21	Broccoli	5.00	0.1%	3.00	0.0%
22	Sweet Potato	5.00	0.1%	6.50	0.0%
23	Mushroom	0.09	0.0%	4.40	0.0%
	Total	3630.09	100.0%	34026.40	100.0%
Source: Department of Agriculture and Horticulture Nagaland					

Area and Production of Spice crops:

In 2019-20, Spice crops are cultivated in the area of 1,210 ha with a production of 6,344 tons. Major spice crops cultivated in the district are Large Cardamom and Ginger in the area of 702 ha and 350 ha with the production of 460 tons and 4,921 tons.

Table 5: Area and production of the spice crops					
S. No	Spice crops	Area (Ha)	% Share	Production (MT)	% Share
1	Cardamom Large	702.00	58.0%	460.00	7.3%
2	Ginger	350.00	28.9%	4921.00	77.6%
3	Red Chilly	110.00	9.1%	450.00	7.1%
4	Garlic	22.00	1.8%	235.00	3.7%
5	Turmeric	15.00	1.2%	255.00	4.0%
6	Coriander Seed	11.00	0.9%	23.00	0.4%
	Total	**1210.00**	**100.0%**	**6344.00**	**100.0%**
Source: Department of Agriculture and Horticulture Nagaland					

Area and Production of Flower crops in the district

In 2019-20, the flower crops are cultivated in the area of 1,600 sq. M with the production of 83,100 Per stem.

Table 6: Area and Production of flowers crops					
S. No	Flower crops	Area (Sq M)	% Share	Production (Per stem)	% Share
1	Alstroemeria	400	25.0%	12500	15.0%
2	Carnation	400	25.0%	32000	38.5%
3	Lilium	400	25.0%	10500	12.6%
4	Rose	400	25.0%	28100	33.8%
	Total	**1600**	**100.0%**	**83100**	**100.0%**
Source: Department of Agriculture and Horticulture Nagaland					

ii. ODOP production as a percentage of total agricultural produce of the district

in 2019-20, the total area under the crops in the district is 49.5 thousand ha with the production of 165.6 thousand tons. Soybean is cultivated in the area of 7.6 thousand ha with the production of 9.8 thousand tons which is 15.5% of the total crop area and 5.9% of the total crop production in the district respectively.

Table 7: ODOP production as a percentage of total agricultural produce in the district					
S. No	Crop	Area (Ha)	% Share	Production (MT)	% Share
1	**Soybean**	**7,668**	**15.5%**	**9,810**	**5.9%**
2	Other Pulses, cereals, and oil seeds	34,614	69.8%	90,626	54.7%
3	Fruit crops	2,446	4.9%	24,811.5	15.0%
4	Vegetable crops	3,630.09	7.3%	34,026.4	20.5%
5	Spices	1,210	2.4%	6,344	3.8%
	Total	**49,568.09**	**100.0%**	**1,65,617.9**	**100.0%**
Source: Department of Agriculture and Horticulture Nagaland					

iii. Perishable nature of the produce

Soybean is a semi-perishable crop. If the crop is properly stored with the appropriate moisture condition it can be stored for up to 6 to 10 months.

Table 8: Perishable nature of the produce		
S. No	**Product**	**Shelf life**
1	Soybean crop	6 Months to 8 Months
2	Soybean oil	6 to 8 Months
3	Soybean meal	18 Months
4	Soybean Flour	6 Months
5	Soybean milk/ Curd	3 to 5 days
Source: Primary Survey		

iv. Production of ODOP agriculture produce in that district compared to other districts and states

In 2019-20, the total area under the soybean crop in the Nagaland state is 25.1 thousand ha with a production of 31.7 thousand tons. Zunheboto district contributes 30.5% of the total soybean crop area and 31% of the total crop production in the state. Mon district and Tuensang district are the second and third largest soybean crop growing districts in the state with 12.2% and 8.6% crop area with production of 12.2% and 8.4% crop production respectively.

Table 9: District-wise Area and Production of the Soybean crop in the Nagaland

S. No	District	Area (Ha)	% Share	Production (MT)	% Share
1	**Zunheboto**	**7,668**	**30.5%**	**9,810**	**30.9%**
2	Mon	3,077	12.2%	3,876	12.2%
3	Tuensang	2,155	8.6%	2,671	8.4%
4	Phek	2,135	8.5%	2,711	8.5%
5	Kohima	2,085	8.3%	2,660	8.4%
6	Dimapur	2,065	8.2%	2,570	8.1%
7	Wokha	1,564	6.2%	1,958	6.2%
8	Mokokchung	1,123	4.5%	1,396	4.4%
9	Kiphire	1,113	4.4%	1,396	4.4%
10	Longleng	1,102	4.4%	1,366	4.3%
11	Peren	1,083	4.3%	1,356	4.3%
	Nagaland	**25,170**	**100.0%**	**31,770**	**100.0%**

Source: Department of Agriculture and Horticulture Nagaland

Area and Production of the soybean crop in other states

In 2019-20, the total area under the soybean crop in India is 107.5 lakh ha with the production of 93.2 million tons. Madhya Pradesh and Maharashtra are the major states in soybean production with 40.1 and 42.4 Mn tons production respectively. Madhya Pradesh and Maharashtra contribute 85% of the total crop production in the country.

Table 10: Area and Production of the soybean crop in other states in India

S. No	State	Area (Lakh Ha)	% Share	Production (MN tons)	% Share
1	Madhya Pradesh	51.95	48.3%	40.1	43.0%
2	Maharashtra	37.3	34.7%	39.5	42.4%
3	Rajasthan	9.62	8.9%	6.56	7.0%
4	Karnataka	3.3	3.1%	2.69	2.9%
5	Andhra Pradesh	1.78	1.7%	1.6	1.7%
6	Gujarat	1.03	1.0%	0.86	0.9%
7	Chhattisgarh	0.742	0.7%	0.53	0.6%
8	Other	1.84	1.7%	1.38	1.5%

Table 10: Area and Production of the soybean crop in other states in India					
S. No	State	Area (Lakh Ha)	% Share	Production (MN tons)	% Share
	Total	**107.562**	**100.0%**	**93.22**	**100.0%**
Source: The Soybean Processors Association of India					

v. Number of workers engaged in the ODOP cultivation

In 2019-20, soybean was cultivated in the area of 7668 ha in the Zunheboto district. The average land holding in the Nagaland state is 0.6 ha and the average household size is 5.

The number of households involved in the cultivation of the soybean crop in the district is 4,600 households and the number of workers involved in the cultivation of the soybean crop in the district is 23,004. It is estimated that 13% to 15% of the total population in the Zunhebtoto district is involved in the cultivation of the Soybean crop.

Non-ODOP:

i. What other major crops are being cultivated apart from the chosen ODOP Product.

Maize, Jhum paddy, WTRC paddy, Rapeseed mustard, Rajma/ Kholar, Leafy vegetables (Amaranthus, Kashmiri sag, spinach, etc.), Tapioca, Banana and Passion fruit, and cardamom are the major crops cultivated in the district apart from the soybean crop which is chosen as the ODOP in the district.

ii. Total Production of each of the Produces in the District:

Area and Production of the major crops in the district

Maize, Jhum paddy, WTRC paddy, and Rapeseed mustard have cultivated the area of 10,110 ha, 9,210 ha, 5,760 ha, and 2,122 ha with the production of 20,030 tons, 18,337 tons, 16,641 tons, and 2,151 tons respectively. The top four crops in the district are grown in an area of 27,202 ha with a production of 57,159 tons.

Table 11: Area and Production of the major crops in the district			
S. No	Crop	Area (Ha)	Production (MT)
1	Maize	10,110	20,030
2	Jhum paddy	9,210	18,337
3	WTRC paddy	5,760	16,641
4	Rapeseed Mustard	2,122	2,151
5	Rajma/ Kolar	942	1,196
6	Large Cardamom	702	460
7	Banana	620	8,880
8	Passion fruit	570	1,291

Table 11: Area and Production of the major crops in the district			
S. No	Crop	Area (Ha)	Production (MT)
9	Leafy vegetables	537	4,320
10	Tapioca	512	9,247
Source: Department of Agriculture and Horticulture Nagaland			

iii. Non-ODOP produce as a percentage of total agricultural produce of the district:

Coffee-based products and Kiwi-based products are chosen as the Non ODOP products of the district based on the production of the produce and the number of units processing the commodity in the district.

Area and Production of fruit crops:

In 2019-20, the total area under the fruit crops in the district is 2,446 ha with a production of 24,811 tons. Kiwi fruits are cultivated in the area of 96 ha with the production of 891 tons which is 4% of the total fruit crop area and 3.6% of the total fruit crop production in the district.

Table 12: Area and Production of fruit crops					
S. No	Fruit crops	Area (Ha)	% Share	Production (MT)	% Share
1	Banana	620.00	25.3%	8,880.00	35.8%
2	Passion Fruit	570.00	23.3%	1,291.00	5.2%
3	Kinnow/Mandarin Orange	409.00	16.7%	3,250.00	13.1%
4	Pineapple	360.00	14.7%	6,790.00	27.4%
5	Papaya	105.00	4.3%	1,610.00	6.5%
6	**Kiwi**	**96.00**	**3.9%**	**891.00**	**3.6%**
7	Guava	55.00	2.2%	450.00	1.8%
8	Mango	38.00	1.6%	105.00	0.4%
9	Peach	35.00	1.4%	280.00	1.1%
10	Litchi	33.00	1.3%	165.00	0.7%
11	Plum	28.00	1.1%	220.00	0.9%
12	Pear	25.00	1.0%	260.00	1.0%
13	Apple	24.00	1.0%	61.00	0.2%
14	Aonla/Gooseberry	21.00	0.9%	265.00	1.1%
15	Watermelon	15.00	0.6%	97.50	0.4%
16	Jackfruit	7.00	0.3%	153.00	0.6%
17	Sweet Orange/Mosambi	5.00	0.2%	43.00	0.2%
	Total	**2446.00**	**100.0%**	**24811.50**	**100.0%**
Source: Department of Agriculture and Horticulture Nagaland					

Area and Production of crops in the district

In 2019-20, the total area under the crops in the district is 49.5 thousand ha with the production of 165.6 thousand tons. Kiwi contributes 0.2% of the total agricultural crop area and 0.5% of the total crop production in the district.

Table 13: Area and production of crops in the district

S. No	Crop	Area (Ha)	% Share	Production (MT)	% Share
1	Pulses, cereals, and oil seeds	42,282	85.3%	1,00,436	60.6%
2	Kiwi fruit	96	0.2%	891	0.5%
3	Fruit crops	2,350	4.7%	23,920.5	14.4%
4	Vegetable crops	3,630.09	7.3%	34,026.4	20.5%
5	Spices	1,210	2.4%	6,344	3.8%
	Total	**49,568.09**	**100.0%**	**1,65,617.9**	**100.0%**

Source: Department of Agriculture and Horticulture Nagaland

iv. Perishable nature of the produce:

The perishable nature of the ODOP-based products is listed below.

Table 14: Perishable nature of the produce

S. No	Particulars	Shelf life
1	Coffee beans	6-9 Months
2	Coffee powder	15 30 days
3	Kiwi fruit	3 to 7 days
4	Kiwi RTS	10 to 15 days

v. Number of workers engaged in the cultivation of each of the ODOP products.

The total area under Non-ODOP cultivation in the district is 96 ha in 2019-20. It is estimated that approximately 360 employees are engaged in the cultivation of non-ODOP crops in the district.

B. Assessment of the existing Policy and Regulatory frameworks for FPI and FPI Micro Enterprises in the State:

i. Assessment of Food Processing Policies in the State:

Pradhan Mantri Kisan SAMPADA Yojana by MOFPI

The government of India (GOI) has approved a new Central Sector Scheme – Pradhan Mantri Kisan SAMPADA Yojana (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters) with an allocation of Rs. 6,000 crores for the period 2016-20 coterminous with the 14th Finance Commission cycle. The scheme will be implemented by the Ministry of Food Processing Industries (MOFPI).

PM Kisan SAMPADA Yojana is a comprehensive package that will result in the creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet. It will not only provide a big boost to the growth of the food processing sector in the country but also help in providing better returns to farmers and is a big step towards doubling farmers' income, creating huge employment opportunities, especially in the rural areas, reducing wastage of agricultural produce, increasing the processing level and enhancing the export of the processed foods.

The following schemes will be implemented under PM Kisan SAMPADA Yojana :

- Mega Food Parks
- Integrated Cold Chain and Value Addition Infrastructure
- Creation/ Expansion of Food Processing/ Preservation Capacities (Unit Scheme)
- Infrastructure for Agro-processing Clusters
- Creation of Backward and Forward Linkages
- Food Safety and Quality Assurance Infrastructure
- Human Resources and Institutions

Table 15: Nagaland State Government policy in FPI Policy and Incentives	Description
Name of Policy	State Industrial Policy-2000 (Revised-2004)
Nodal Agency	The Ministry of Food Processing Industries (MOFPI)
Single Window Clearance System	Not available

Table 15: Nagaland State Government policy in FPI	
Policy and Incentives	**Description**
Power/Electricity Subsidy	Subsidy on power will be provided at the rate of 30% and 25% for connected loads up to 1 MW and above 1 MW respectively for five years from the date of commercial production subject to a maximum ceiling limit of ` 2.00 lakh annually. This will be a reimbursement scheme for the actual consumption of power for the manufacturing process substantiated with requisite details.
	Drawal of Power Line: Cost of drawal of 33/11 KV line to eligible units located outside the notified areas shall be reimbursed for one time only subject to a ceiling of `2:00 lakh (now as per NEIIPP-2007, anywhere in the State)
Capital Subsidy	Not available
Interest Subsidy	Not available
VAT/CST/SGST/TAX Exemption/Reimbursement	**Stamp Duty Exemption** 50% Stamp Duty and Registration Fee for securing loans from Financial Institutions including Mortgage of fixed assets shall be exempted from the Stamp Duty Act for 5 (five) years
Employment Generation	**Manpower Subsidy** The government will reimburse up to 25% of the actual wage bill for local tribal employees employed by eligible units up to three years from the date of entertainment subject to a maximum ceiling of Rs.1.00 lakh annually. This grant would be for five years from the date of entertainment of such staff and would be given to those units where the investment in plant and machinery exceeds Rs.10.00 lakh and the number of employees engaged in the unit exceeds 20 (twenty) numbers and where the at least 50% of the employees are local tribal youth. Units availing subsidy under this scheme shall take all effective steps to ensure 75% employment of local youth over five years. This subsidy will be admissible on a reimbursement basis for only those employees who complete one year of regular employment in the unit.
Freight/Transport Subsidy	Not available

Table 15: Nagaland State Government policy in FPI	
Policy and Incentives	**Description**
Others	**Subsidy for Feasibility Study Cost** The subsidy will be available at the rate of 50% of the cost of Detailed Reports subject to a ceiling of Rs.1.00 lakh, which shall be eligible only for new units with investment in plant and machinery above Rs.25 lakh provided the report is prepared by a Government approved Industrial Consultants.
	Subsidy Incentives for 100% Export Oriented Units (EOU) An additional 5% capital investment subsidy is subject to a maximum ceiling of Rs.3.00 lakh.
	Subsidy for Quality Control measures The cost of laboratory equipment for quality control and ISI/BIS/ISO 9000 certification will be reimbursed subject to a maximum ceiling ofRs. 50,000/- in cases where it does not form part of the project cost for SSI and Rs.1.00 lakh in case of Large and Medium units.

ii. Assessment of ongoing and proposed Government programs of Nagaland Administration in the FPI and allied sectors:

Currently, there are no existing food processing policies in the state. Recently the Industry and Commerce department of Nagaland, Proposed One food processing policy named “Nagaland State food processing Industries policy (NSFPI).

iii. Assessment of existing Regulatory frameworks for FPI:

PM FME Scheme- PM Formalization of Micro Food Processing Enterprises Scheme-

Unorganized micro food processing units, need intensive hand-holding support for skill training, entrepreneurship, technology, credit, and marketing, across the value chain, necessitating active participation of the state government for better outreach. In the last decade, Central and State Governments have made intensive efforts to organize farmers in Food Processing Organizations (FPOs) and women’s Self-Help Groups (SHGs). SHGs have achieved considerable progress in thrift and their repayment record with a 97% NPA level is among the best. Governments have made efforts to enable SHGs to undertake various manufacturing and service sector activities including food processing. However, there are few Government schemes to support FPOs andSHGs to make investments and upscale their operations.

This scheme is a centrally sponsored scheme that is designed to address the challenges faced by micro-enterprises and to tap the potential of groups and cooperatives in supporting the up-gradation and formalization of these enterprises.

Table 16 PMFME Scheme- PM Formalization of Micro Food Processing Enterprises Scheme

Scheme Component	Particulars
Support to individuals and groups of micro-enterprises	Individual micro food processing units would be provided credit-linked capital subsidy @35% of the eligible project cost with a maximum ceiling of Rs.10.0 lakh per unit. The beneficiary contribution should be a minimum of 10% of the project cost with the balance being a loan from the bank.
Farmer Producer Organizations (FPOs)/Producer Cooperatives	i) Grant @35% with credit linkage; ii) Training support; iii) Maximum limit of grant in such cases would be as prescribed.
Self-Help Groups (SHGs)	Seed capital: i) Seed capital @ Rs40,000/- per member ofSHG for working capital and purchase of small tools would be provided under the scheme; ii) Priority would be given to SHGs involved in ODOP produce in giving seed capital; iii) All the members of an SHG may not be involved in food processing. Therefore, seed capital would be provided at the federation level ofSHGs; iv) This would be given as a grant to the SHG federation by SNA/ SRLM. SHG federation would provide this amount as a loan to the members ofSHGs to be repaid to the SHG.
Support to individual SHG member	As a single unit of the food processing industry with credit linked grant @35% with the maximum amount being Rs 10 lakh.

iv. Stakeholder Mapping

MINUTES OFTHE MEETING (MOM) OF NAGALAND PMFME SLUP STAKEHOLDERS MEETING DTD 09-02-2022 HELD AT DIRECTORATE OF INDUSTRIES and COMMERCE, KOHIMA – ONLINE and OFFLINE MODE – REG

Industries and Commerce

- Kekhrievor Kevichusa, Commissioner and Secretary, Industries and Commerce department (Commissioner)
- Hokishe K Assumi, Director of Industries and Commerce (Director)
- Vitsutho Nyuthe, Additional Director of Industries and Commerce (Additional Director)
- Zakielatuo Yiese, Deputy Director, Industries and Commerce (Deputy Director)
- Mhasiphizo Michael Khezhie, Nodal Officer, PMFME Scheme, Directorate of Industries and Commerce (Michael)

TransGraph

- Dr. Abdul RahmanIlyas, Global Head and Vice President, TransGraph Consulting, Hyderabad
- Mr.DeekshitManchaiah, Analyst, TransGraph Consulting, Hyderabad

Stakeholders

- M. Rollan Lotha, COO, NSRLM, Nagaland
- Lentinaro, Program Manager, NSRLM
- Dr.Hiales Zeliang, Deputy Director, Veterinary, GoN
- Dr.Vimezo Kire, Deputy Director, Fisheries, GoN
- Sendong, Jr. Asst. Commissioner, Food Safety, GoN
- Meyasashi, Deputy Director Horticulture, GoN
- Bokato Hesso, Deputy Director, Cooperation department. GoN

The meeting was held in the Directorate of Industries and Commerce, Kohima on Feb 9th, 2022 which started at 11.15 Am and concluded at 1.30 Pm.

- The formal introduction was done by Michael who welcomed the offline and online participants, he was apprised about the PMFME scheme and the Stale Level Up gradation Plan (SLUP) and apprised the group that a state-level study was conducted by M/s. Transgraph Consulting prepares district-wise reports that were circulated to all the stakeholders and the objective of this meeting is to take suggestions from every stakeholder to be incorporated into the final report. He requested the attendees to introduce themselves and later requested Commissioner to give the keynote address.

- Commissioner presented the keynote and highlighted how important the PMFME scheme is for the State of Nagaland as it is bound to scale in the coming years in terms of increased support to the

food processing sector, he highlighted the objectives of the PMFME and requested all the stakeholders present to offer their recommendations and suggestions if any to be incorporated into the final SLUP report that will become a torchbearer to implement for the development of the food processing sector so the inputs from all are going to be very crucial and encouraged all to participate.

- Director spoke about ODOP and Non-ODOP and gave a summary that Nagaland the produce is same across all the districts, so not to be confused on the ODOP and Non-ODOP, while in certain districts based on the production of that particular product is high was chosen while in other districts the same stand as Non-ODOP. So PMFME would be looking at the clusters. Director further said TranGraph Consulting Hyderabad has done a good study and the reports have been submitted to all today they will be presenting the summary and key findings of the report for stakeholders' suggestions and feedback. He requested TrangGraph to go ahead and present the report.

- Dr. Abdul Rahman from TransGraph Consulting, Hyderabad gave a brief overview of the PMFME Scheme and SLUP, he acknowledged the support of the Commissioner and Director and his team, and various important stakeholders across Nagaland. He further presented the methodology adopted for the study and gave a detailed crisp presentation on each district and covered 11 districts.

- Mr. RollanLotha, NSRLM spoke about Peren district and informed that they have a 100kg per batch vacuum drier, 24 tray over bio mass solar drier with 250 MT Capacity. In Wokha he informed fishery sector is dominated by Men, whereas NSRLM also includes women, he further informed that a fish value chain project is being currently planned in partnership with ECOP, New Delhi. 1500 kg of fish is going out of Nagaland from the Dhyong River and he wanted to establish a fish processing unit. He further informed that they have been waiting to get cooperative status for their organization which is pending with the Coop Department and requested that it be expedited. So that buy-back arrangement can be extended with a corpus which is currently a bottleneck for them.

- BokatoHesso, Deputy Reg, Cooperation Department, GoN, informed the audience that there is skilled labor available for barista coffee and he has shared a list of 100 cooperatives with the DFPI. He informed that they are working on the 10,000 FPO national mandate driven by Nabardand focusing on the creation of FPOs in Peren, Kiphire, and Kohima. 3 under the cooperative act under Nabard / NCDC and 10 under SFAC under Companys Act. He further informed that at Block level 5 villages engage in cooperative activity, hence they are trying to develop an Integrated Multipurpose Cooperative Society to tap the small group on their Adhaar base.

- Mr.Ashish, Trangraph's Survey lead informed that the touch-based Cooperatives list given by the Department and a few of them are inactive and others have been contacted and information captured. He further said that as part of the cluster study all the existing cooperatives will be mapped.

- Deputy DOH informed us that there is a marketable surplus in Pineapple and Kiwi. For example, he said farmers throw 20-25 of their produce at farm level and do not even bother to value add because of lack of time similarly in Kiwi there is a 50% marketable surplus resulting out of grading as only Grade 'A' is bought by traders. So there is an immense opportunity to convert the marketable surplus into value-added products which is currently not happening. In the district Phek, the production is kiwi is small at the same time other districts also have small production areas of Kiwi such as Kohima, Zonhebato, and Tusenang for which an aggregation hub can be created.

- Michael took over and informed all the stakeholders present to send their suggestions and feedback earlier by Monday i.e. 13th February 2022 formally. So that their respective feedback can be captured in the final report. He also requested the online participants to send their feedback by email. He further requested Additional Director to give closing remarks.

- Add. Director Industries thanked TrangGraph for giving an elaborate presentation and also thanked the participants for giving their valuable feedback. He also informed me that the report is in finalization state all the feedback and suggestions given will be incorporated.

The meeting concluded at 13.30 hours.

C. Profiling of existing Micro Enterprises ecosystem:

1. Industrial Profile of the District in the State

There are 95 registered industries in the district and 190 employees are working in the registered district that is on average 2 members are working in each enterprise. There is only one small-scale industry in the district and there is no medium and large-scale industry in the district. There is also no industrial area in the district.

From the primary survey, it is estimated that 240 to 260 unregistered food processing units are operating in the district.

Table 17: Industrial profile of the district in the state

S. No	Particulars	Unit	Particular
1	Registered industrial unit	No.	95
2	Estimated average no. of daily workers employed in small-scale Industries	No.	190
Source: MSME Nagaland			

2. Identifying Non-ODOP Products:

Coffee-based products and Kiwi-based products are Identified Non – ODOP products in the district.

Table 18: Non-ODOP products

S. No.	Crop Name	Value added products
1	Coffee	Coffee powder
2	Kiwi	Kiwi RTS, Dried Kiwi slices

4. District wise Industrial profiling based on secondary research

The District Industries Center needs to be strengthened extension work to achieve the growth envisaged by exploiting the estimated potential. The present position regarding the infrastructure available in terms of training centers, road networks, services centers, etc is inadequate and needs to be augmented to bring about a positive change in the climate. At present, the district has the following networks of centers/units.

1. Beekeeping unit- 1
2. Lemon grass Distillasation unit- 1
3. Rural artisan project training unit- 1
4. Steel trunk 4
5. Mini Rice mills 12
6. Handloom demonstration unit 4

To encourage prospective entrepreneurs to take up industrial activities, there are provisions to provide margin money/ seed money/ subsidy by the implementing agencies.
However, several constraints may be highlighted:-

- Lack of basic infrastructure facilities, inadequate marketing support/ accessibility, and raw material supply.
- Inadequate power supply
- Shortage of skilled /trained manpower
- Lack of industrial experience, and non-availability of managerial, administrative, and technical experience among the local entrepreneurs.
- High-cost raw materials and transportation
- Lack of coordination among various development agencies
- Credit flow is very low due to poor return of bank loans.

i. Is the district recognized with the ODOP product?

The soybean crop is recognized as the ODOP of the district based on the existence of household and micro-processing enterprises processing the commodity and the relevant commodity is grown largely in the district.

Awareness about the ODOP Product in the District

From the primary survey, it is observed that among 21 respondents only 1 of the respondent is aware of the ODOP of the district. It is suggested for the DIC (District Industries center) promote and advertise the schemes and policies promoting the food processing enterprises in the district.

ii. Has the product been granted Geographical Indication status by the Government of India?

Soybean-based products which are the ODOP of the district are granted no Geographical indication by the GoI.

“Naga Mircha”, “Naga tree tomato”, and “Naga cucumber” are the three agricultural commodities granted the GI tag from Nagaland.

iii. Special nature and relationship of the product with the district, uniqueness, history, etc?

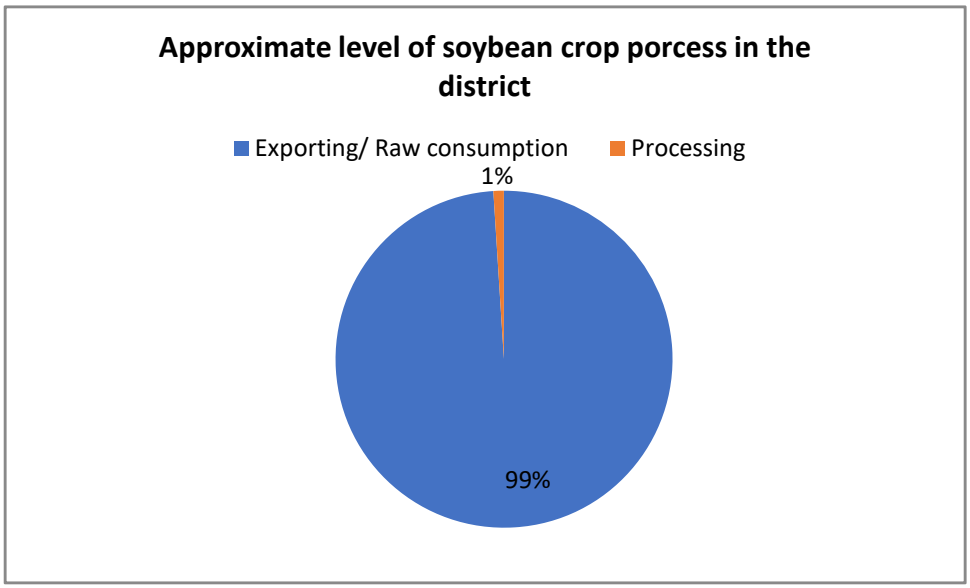
Soybean is an important crop in the Zunheboto district which finds its uses in many forms. Fermented ethnic soybean products have an important role in the culture of northeast people. There is no uniqueness and history to the soybean crop grown in the Zunheboto district.

iv. Level of processing happening for ODOP in the district, in other districts, and outside the State.

From the primary survey, it is estimated that only 10 to 15 tons of the total 9,810 tons of the soybean crop produced in the district are processed into soy flour and soy oil in the district. The majority of crop

produced in the district is exported to other districts and states. The majority of the households in the district consume the commodity for household purposes.

Figure 1: Approximate level of soybean processing in the district



v. Mapping of the Micro, Small, Medium, and Large Industries in the District (Total number of Units).

The total number of Micro, Small, Medium, and Large processing units available in the district and their business activities like which product they are processing either ODOP or Non-ODOP is summarized below table:

Details of Existing Micro & Small Enterprises and Artisan units in the District

Table 19: Existing Micro and Small Enterprises and Artisan units in the Peren District

S. No	Type of Industry	No. of Units	Investment (Lakh)	Employment
1	Agro based	1	0.5	4
2	Other industry	47	33	112
	Total	**48**	**33.5**	**116**

Source: Directorate of Economics and Statics, Govt. of Nagaland

vi. Number of clusters engaged in the processing of this product

There is no processing cluster for the soybean crop despite the good amount of the crop grown in the district.

Potential cluster for the soybean crop in the district are Lumami, Satoi, Kawoto, Satami, Akuluto, Aichisaghemi, Tichipami, Netoi village, Xuivi, Hebolimi, Phishumi, Sukomi etc.

There is a cluster for non-agricultural commodities like Handloom in the district.

Name of the Cluster: - Handloom Cluster at Zunheboto town Proposal

Table 20: Handloom cluster in the Zunheboto district

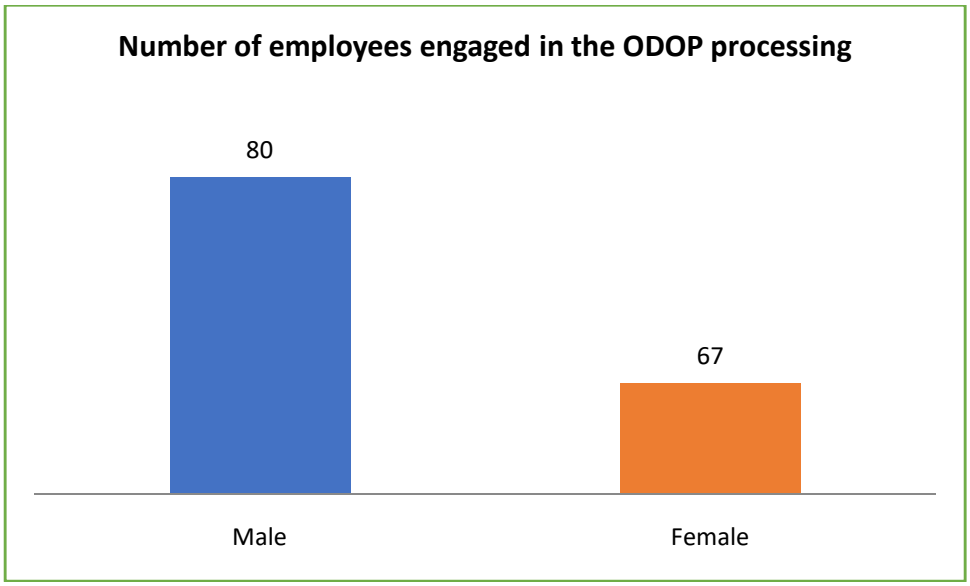
S. No	Particulars	
1	Principal products Manufactured in the cluster	Mekhela, Loom fabric, Shawls, etc
2	Name of the cluster	Handloom Cluster at Zunheboto town
3	No. of functional units in the clusters	50 Nos
4	Turnover of the clusters	1.50 lacs
5	Value of exports from the clusters	Nil
6	Employment in clusters	100 Nos
7	Average investment in plant &Machinery	1.50 lacs
8	Major issues/ requirement	Design, Capacity building, New Technology, etc.
9	Presence of capable institutions	NKVIB, Zunheboto
10	Thrust Areas	Export, marketing, Training, etc.
11	Problems and constraints	Loan, Power, Raw materials, etc.

vii. Number of workers engaged in the ODOP processing

From the primary survey, it is estimated that there are 240 to 260 unregistered food processing enterprises in the district and approximately 700 to 800 employees are working in the food processing enterprises.

In the 21 enterprises processing the soybean crop in the district, It is observed that 147 employees are engaged in the primary processing of the soybean crop in the district. Among the employees engaged in soybean crop processing, 80 are male employees and 67 are female employees.

Figure 2: Number of workers engaged in the ODOP processing



viii. Marketing linkages within the district, state, and outside

Soybean and their processed products are the preferred accompaniment for most Naga dishes including pork, chicken, and fish preparations. It is boiled, fermented, and crushed before being used in the dishes. Soybean is useful for preparing soy milk and tofu which are healthy alternatives to cow milk and paneer. There is one tofu processing enterprise in the Dimapur district.

Currently, none of the traders or the processing enterprises is following any of the specialized marketing practices like an advertisement or digital marketing. The farmers are selling the produce to the local retailers and the traders in the district at discounted prices (15 to 20 INR Per Kg)and the traders are further selling the produce t the wholesalers (20 to 25 INR Per Kg) and the retailer (25 to 30 INR Per Kg) in the other district after the primary processing. A retailer in the district sells the produce to the consumer (30 to 33 INR per Kg) in the district.

It is proposed to provide training on branding and marketing of the processed products to the farmers, traders, and the processing enterprises in the district to create a brand and market for the soybean crop and processed products.

ix. Level of infrastructure for ODOP processing within the district, in other districts, and in States

There are no common infrastructure facilities like pack houses, warehouses, cold storage, and common processing facilities in the district. There is no FSSAI-accredited food testing lab in the district.

All the traders and the farmers in the district are manually or traditionally grading and sorting the products without the usage of any machinery or types of equipment. It is proposed to set up one common processing facility with 3-4 processing lines in the district. An incubation center is also

proposed in the district for training and handholding support for the food processing enterprises. It is proposed to provide the machinery and equipment at subsidized prices to the existing and new processing enterprises to increase crop processing in the district.

APMC in the district:

There are 2 APMCs in the district used for crop trading.

Table 21: APMC in the district

S. No	Name of Market	Location	Delineated Market area
1	Principal Market Yard (PMY) Zunheboto	Zunheboto Town, Kohima Road	Zunheboto District excluding Pughoboto and Ghathashi.
2	Principal Market Yard (PMY) Ghatashi	Ghathashi Town	The entire area is under Pughoboto Sub-division and the Ghathashi area.

Infrastructure in other districts:

There are only 2 cold storage structures in the district of capacity 6150 MT in the district.

Table 22: Cold storage in the Dimapur district

S. No	Name and Address	Capacity in MT	Sector	Commodity
1	MARCOFED cold storage, Dimapur	1,150	Cooperative	Multipurpose
2	L. Doulo Builders and Suppliers Co (P) Ltd, Dimapur	5,000	Private	Multipurpose
	Total	**6,150**		
Source- APEDA				

x. Total production value of the ODOP product manufactured in the district and as % of total agricultural production.

The soybean crop is cultivated on 7,688 hectares of land in Zunheboto, with an annual production of 9,810 MT during the year 2019-20. The soybean crop contributes 15.5% of the total agricultural area in the district with the production of 5.9% of the total crop production in the district. Zuheboto contributes 30.5% of the total soybean crop area in the state with the production of 30.9% of the total crop production in the state.

Per kilogram of the soybean crop is sold at the price of approximately 35 to 45 INR per kg. It is estimated that INR 343.35 to 441.45 million worth of soybean crops is produced in the district. Among the total soybean crop produced in the district only 10 to 15 tons of the crop is processed into flour in the district. It is estimated that INR worth 22 lakhs to 33 lakhs worth of soybean flour proceeds in the district.

xi. Number of enterprises involved in the processing of this product and as a % share of the total number of micro food processing enterprises in that district

21 enterprises are involved in soybean processing in the district. Soybean processing involves drying, sorting, grading, and packaging. There is no major secondary processing oil extraction, soy chunks, and soy milk. Only 10 to 15 tons of the crop produced in the district is processed into soya flour.

xii. Number of Self Help Groups and Farmer Producer Organizations engaged in the Processing of this product.

The Nagaland State Co-Operative Marketing & Consumers' Federation (Marcofed) Ltd., H.O. Dimapur
The Nagaland State Co-operative Marketing and Consumers' Federation Ltd. popularly known as MARCOFED is an Apex Level Co-operative Institution for Marketing Agricultural produces and distribution of essential commodities in the State which was established in the year 1968 under the sponsorship of the State Govt. as a public sector undertaking with its Registration No. NL/0222 Dt. 17-08-1968 and based in Dimapur as its Head Office, Nagaland.

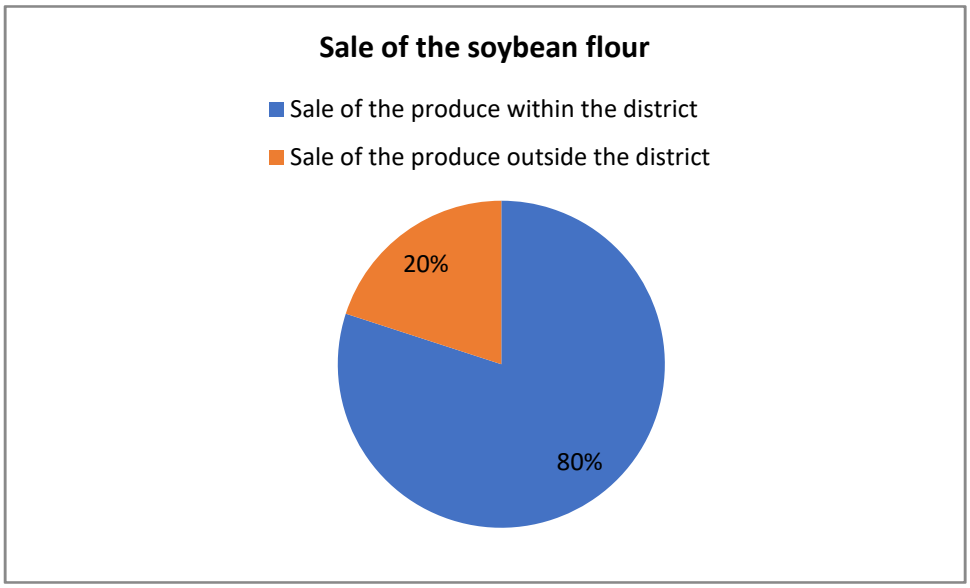
Under the District, the State Government has promoted an FPO by the name, 'Zunheboto District Organic Farmer Co-operative Society Ltd.' with 1129 farmers as registered members.

A list of the FPOs, SHGs, and Co-operatives is attached in the annexure.

xiii. Sale of this product to other districts, and states and exported to other countries

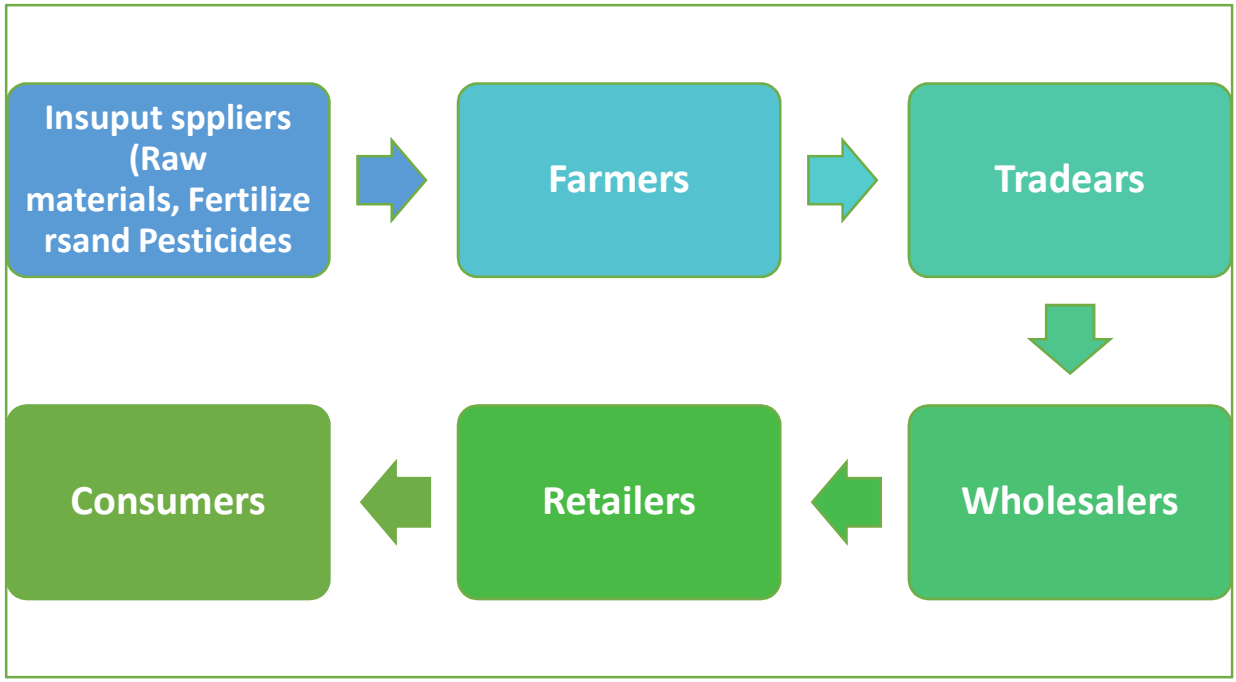
From the primary survey, it is estimated that only 10 to 20% of the 10 to 15 tons of soybean flour processed in the district is exported to other districts in the state through wholesalers and retailers. 80 to 90% of the flour is processed in the household and used for household needs only.

Figure 3: Sale of processed products to other districts and states



5. Mapping the value chain aspects

Figure 4: Mapping the value chain aspects



Villagers prefer to sell the produce at the village level as the transportation of the crop to other places in the district is quite expensive. The traders after purchasing the crop from the farmers perform the primary processing and selling to the wholesalers and the retailers in the Zunheboto district and another district.

Traders buy the product at a discount of around 30-40% of the retail selling price. There is an established sales channel through which soybean is exported from the state. Aggregators at district towns collect the product and sell it to traders in Jorhat; who in turn sell it to traders in other parts of India mostly northern India. There is a minimal quantity value addition to soybeans like oil extraction and soy meal production in Zunheboto.

6. Understanding the Infrastructure constraints faced by Micro Enterprises:

The quality and connectivity of the roads are the basic infrastructure constraint in the district. Financial assistance requires for the purchase and up-gradation of the machinery and equipment for the soybean processing enterprises. Skill development training is required regarding the quality parameters of the processed products, FSSAI certification, and new technology developed related to commodity processing. Food processing enterprises in the district are lacking in awareness about government-promoting schemes and recent developments in the food processing industry in the state and the county.

Table 23: Infrastructure constraints faced by micro-enterprises

Infrastructure	Up-gradation proposals
A) Public Infrastructure	• Soybean farmers and traders (Primary processors) are facing product losses during transporting their produce to wholesalers and retailers in the district and other districts in the state. • To overcome this issue it is suggested for the state and central government to construct better roadways to connect nearby districts as well as to other states, which will reduce the crop loss post harvesting and also encourage existing enterprises to expand their business and new entrepreneurs to come into the sector.
B) Common facilities	• There is no common infrastructure like pack houses, warehouses, and cold storage in the district for the processing enterprises and the farmers for primary processing. • It is proposed to establish one Common processing facility center with machinery like Screw Conveyor, Dryer, Extruder, Mixer, Soybean soaking and washing machines, Grinding and separating machine, Soya cooking machine, Homogenizer, and soya milk plate heat exchanger machine in the district for the existing and new enterprises.
C) Testing facilities	• There is no food testing lab in the district. • Due to poor public infrastructure and lack of common infrastructure facilities, the scale of the industry is very small in the district and the majority of the enterprises are not centerfield by the FSSAI. • It is proposed to set up the testing lab in the proposed incubation center for the existing and new enterprises.
D) Safety standards	• Most of the processor units in the district are not certified by the FSSAI.

	• Regular safety standards and quality checks for the processed product are required to ensure the quality of the product processed by the enterprises in the district.

D) Mapping the firm-level issues:

Table 24: Mapping the firm-level issues

S. No	Sectors	Gaps	Recommendations	Costing (Lakhs)
1	Skill training needs	• There is no skilled labor in the food processing industries in the districts and there are no proper skill training facilities available in the district.	• Provide training to the existing enterprises (Primary processing and secondary processing) and new entrepreneurs on the standardized process of processing soymilk, soya chunks, extraction of soybean oil, and soybean flour, and training on the branding and marketing of the processed products. • Skill development training on handling the advanced machinery and equipment like machinery like Soybean soaking and washing machine, Grinding and separating machine, Soya milk cooking machine, Sugar dissolving machine, Soya milk twin filter machine, Homogenizer, soya milk filling and sealing equipment, dryer, Mixer machine.	12
2	Manufacturing practices	• Existing farmers/Traders' Enterprises are following the traditional method of soybean drying, sorting,	• It is proposed to set up one common processing facility that can be used for processing the	400

Table 24: Mapping the firm-level issues				
S. No	Sectors	Gaps	Recommendations	Costing (Lakhs)
		and grading which affects the quality of the final product.	products by the enterprises in the district.	
3	Technologies	• There is no use of advanced technology or machinery in the district by the existing enterprises. • Existing farmers/Traders' Enterprises are following the traditional method of soybean sorting, grading, and drying.	Provide the advanced machinery and equipment like machineries like Soybean soaking and washing machine, Grinding and separating machine, Soya milk cooking machine, Sugar dissolving machine, Soya milk twin filter machine, Homogenizer, soya milk filling and sealing equipment, dryer, Mixer machine at the subsidized prices for the existing and new processing enterprises.	1530
4	Access to finance	• Lack of financial support to the processing units due to lack of food processing policies in the state and constraints faced by the unit holders in exhibiting the collateral to the banks and preparing the DPR.	• The proposed incubation center can be used in attaining financial support for the enterprises by providing DPR and guiding the enterprises in attaining financial and technical support.	275
5	Access to mentorship/ Services	• There is no access to mentorship/ service in the district	• An incubation center is proposed to be set up in the district for guiding the existing and new enterprises in the district	275

II)

Detailed cluster study for ODOP products

1. Industry and Market Analysis

1.1 Introduction

A soybean called a golden bean belongs to the legume family. It is native to East Asia. It is a rich source of protein and also an excellent source of fiber. Oil extracted from soybean contain a small amount of saturated fat.

Soybean has an important place in the world's oil seed cultivation scenario, due to its high productivity, profitability, and vital contribution to maintaining soil fertility. The crop also has a prominent place as the world's most important seed legume, which contributes 25% to global vegetable oil production, about 2/3 of the world's protein concentrate for livestock feeding, and is a valuable ingredient in unformulated feeds for poultry and fish.

About 85% of the world's soybeans are processed annually into soybean meal and oil. Approximately 98%of the soybean meal is crushed and further processed into animal feed with the balance used to make soy flour and proteins. Of the oil fraction, 95% is consumed as edible oil; the rest is used for industrial products such as fatty acids, soaps, and biodiesel.

1.2 Benefits of the products

Nutritive value in 100 grams soya chunks

S. No	Particulars	Value
1	Serving size	100 grams
2	Energy (KCal.)	345 grams
3	Protein	52 grams
4	Fat	0.50 grams
5	Carbohydrate	33 grams
6	Dietary fiber	13 grams
7	Calcium	350 Mg
8	Iron	20 Mg
Source: NIFTEM Manual		

Health benefits of soya chunks:

- Good for digestion
- Effective for diabetes control
- Improved bone and tooth healthy
- Good for weight loss
- Essential for pregnant women

1.3 Global Market for the Product:

China is the top soybean-producing country in the world, followed by USA and Brazil. India is at 6th largest producer of the soybean crop in the world.

The global soy food products market is expected to grow at an impressive CAGR over the forecast period of 2020-2030. Demand for organic soybeans has grown over the past 10 years and is expected to increase at a CAGR of12.15% from 2017 to 2022.

Global Soybean Exports

The total export of soy products in 2020-21 is 12,585 thousand tons. Argentina is the major exporter of soybean-based products with 50% of the total global exports. Brazil and the European Union are the 2nd and 3rd largest exporters of global soybean products.

Table 25: Global soybean Exports

Country	2019-2020 (1000 MT)	% Share	2020-2021 (1000 MT)	% Share
Argentina	5,404	43.9%	6,250	49.7%
United States	1,288	10.5%	862	6.8%
Brazil	1,156	9.4%	1,300	10.3%
European Union	927	7.5%	1,000	7.9%
Paraguay	631	5.1%	620	4.9%
Russia	612	5.0%	575	4.6%
Bolivia	380	3.1%	390	3.1%
Ukraine	338	2.7%	230	1.8%
Egypt	265	2.2%	180	1.4%
Others	1,307	10.6%	1,178	9.4%
Total	**12,308**	**100.0%**	**12,585**	**100.0%**

Source: APEDA and India Stat

1.4 Indian Market and Valuation for the Product

With the increasing health consciousness among the general people, the use of soybean is getting acceptance in the form of textured vegetable protein (Popularly known as “Soya baadi” or “soya nuggest”), soya fortified wheat flour, soya milk, tofu, and soya curd, etc. Being mainly the country of vegetarians, India has indeed a very great potential for soya milk, paneer, and curd. Experts predict that the soya food industry will grow 20% annually over the next few years.

The soya nugget market in India is growing at a rate of 25% to 30% which is prompting companies to become more active. The Global textured soy protein market to exhibit a CAGR of 7.9% during the period 2019-2024.

The soybean meal market is segmented based on the process of production as normal soybean meal, De-hulled (minimum 50% protein) hipro soybean meal, dehulled (minimum 48% protein) hipro soybean meal, defatted soya flour toasted, and de0fatteed soya flakes toasted are available in the market.

1.5 Manufacturing Process

Figure 5: Soybean flour manufacturing process

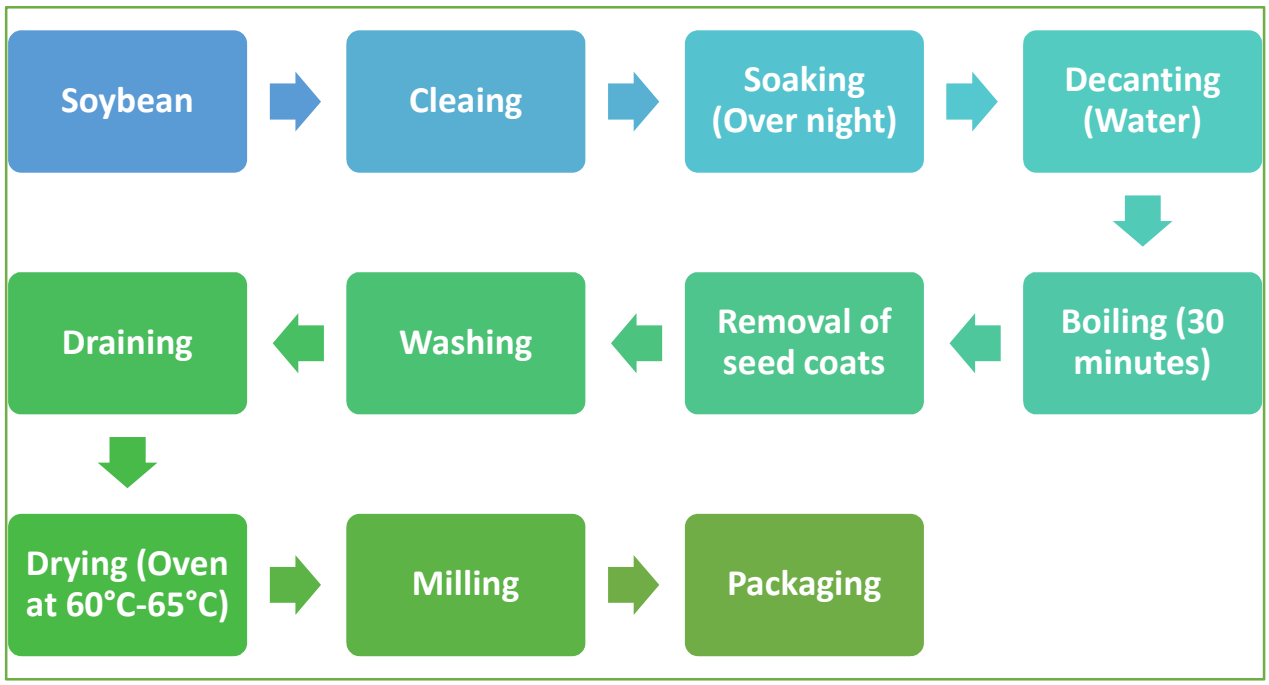
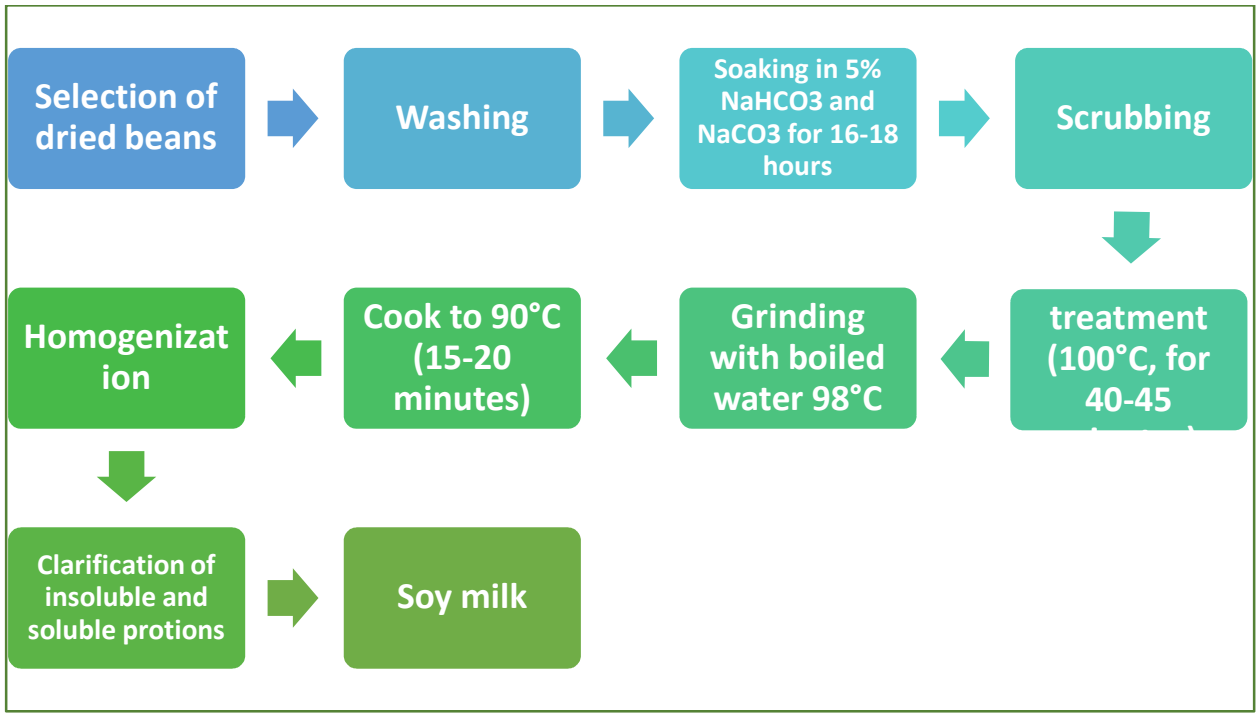
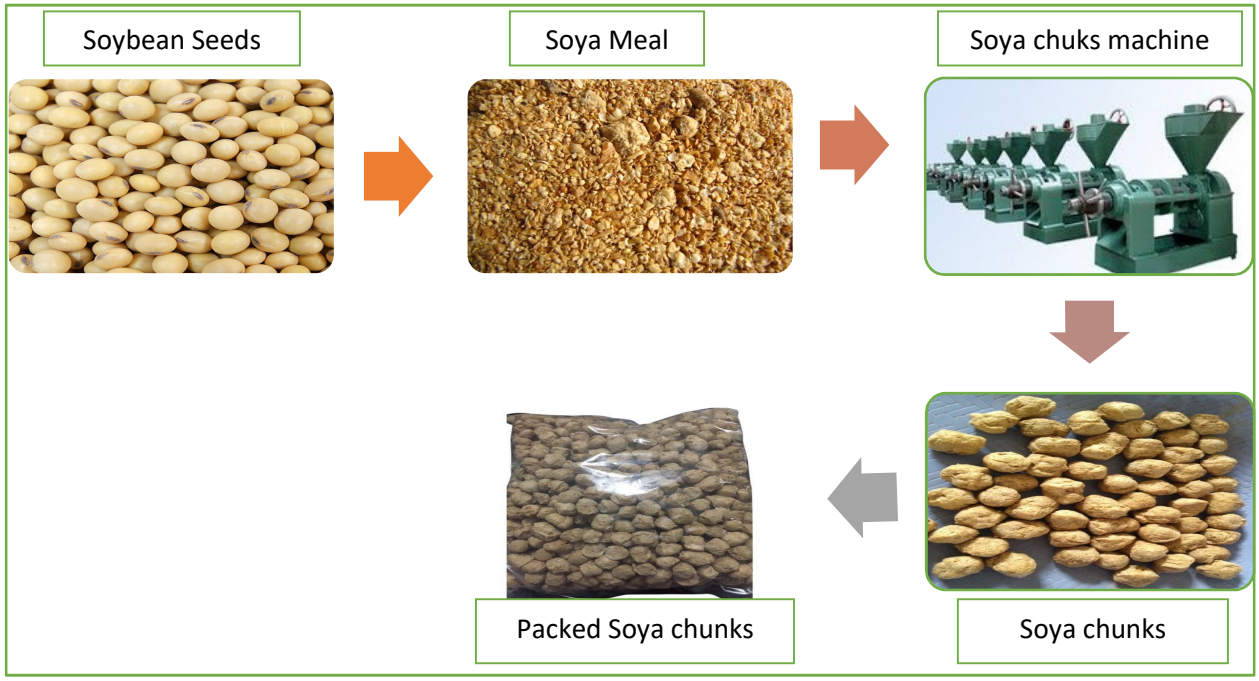


Figure 6: Soy milk manufacturing process



Soybean chunks:

Figure 7: Soya chunks manufacturing process



1.6 Test is done for the Product –

At present pre-processors are not practicing qualitative and quantitative tests for the product. Here we are explaining what are all tests and parameters required for testing. Information is provided based on our primary interaction with FSSAI officials and also through secondary research.

I) Agmark specifications:

The Agmark grade standards for Soybean notified under the Agricultural Produce (Grading and Marking) Act 1937 by the Central Government (Directorate of Marketing and Inspection) are given in below table:

Table 26: Grade designation and definition of quality of Soybean seeds

Grade designation	Oil content on a dry basis percent by weight	The acid value of oil	Moisture content percent by weight	Damaged, discolored, insect-infested beans percent by weight	Immature, shriveled beans percent by weight	Splits, broken, cracked, beans by percent of the weight	Inorganic foreign matter percent by weight	Organic foreign matter percent by weight
Grade-I	20	3	10	1	2	5	0.5	0.5
Grade-II	18	4	12	2	3	10	0.5	0.5
Grade-III	15	6	12	3	5	20	0.5	1.5

General Characteristics:

Soybean shall be;

a) The mature, dried, clean, and wholesome seeds of the plant Glycine max (L) Merrill;

b) Of uniform size, shape, and color characteristic of the variety;

c) Free from mold, musty odor, or added coloring matter;

d) Completely free from admixture of any poisonous, toxic, harmful, or non-edible seeds like neem, argemone, khesari, castor, mahua, etc;

e) Free from pesticides/insecticide residue, except to the extent permissible under the PFA Rules, and shall not contain uric acid exceeding 100 mg/kg and mycotoxin including aflatoxin exceeding 30 micrograms per kilogram.

II) Grade Specifications of Soybean Processors Association of India (SOPA):

SOPA has the vision to focus on the quality of Indian Soybean products marketed both in domestic and international markets to ensure reliable, consistent, and uniform quality and to create brand equity in

both markets. SOPA certifies those Soybean products which are covered by SOPA standards. Specifications for Soybean seed followed by SOPA are as follows:

Table 27: Grade specification of Soybean processors association of India (SOPA)

S. No	Characteristics	Limit	Requirement
1	Moisture, percent by mass	Maximum	12%
2	Protein (N x 6.25), percent by mass	Minimum	36%
3	Crude fat or ether extract, percent by mass	Minimum	18%
4	Acid insoluble ash, percent by mass	Maximum	1.5%
5	Damaged Seeds, percent by mass	Maximum	5%
6	Foreign matter, percent by mass	Maximum	4%
Source: FSSAI Manual			

Soybean oil:

Soyabean oil means the oil expressed from clean and sound soybeans (Soja max) from which the major portion of the gums naturally present have been removed by hydration and mechanical or physical separation. It shall be clear, free from rancidity, suspended or other foreign matter, separated water added colorings or flavoring substances, or mineral oil.

Table 28: Soybean oil standards

S. No	Particulars	Standards
1	Butyro-refractometer reading at 40°C	58.5 to 68
Or		
2	Refractive index at 40°C	1.4649-1.4710
3	Saponification value	188 to 195
4	Iodine value	120 to 141
5	Unsaponifiable matter	Not more than 1.5%
6	Acid value	Not more than 2.50
7	Phosphorus	Not more than 0.02
8	Test for argemone oil shall be negative	
	The oil so refined shall not contain hexane more than 5.0 ppm	
Source: FSSAI Manual		

Solvent extract soya flour:

Solvent extract soya flour means the product obtained from clean, sound healthy soybeans by a process of cracking, de-hulling, solvent extraction with food-grade hexane, and grinding. It shall be in the form of coarse or fine powder or grits, white to creamy white in the color of uniform composition, and free from

rancid and objectionable odor, extraneous matter, insects, fungus, rodent hair, and excreta. It shall be free from any added color and flavor.

Table 29: Soya flour standards

S. No	Particulars	Standards
1	Moisture	Not more than 9.0 percent by weight
2	Total ash	Not more than 7.2 percent by weight on a dry basis
3	Ash insoluble in dilute HCL	Not more than 0.4 percent by weight on a dry basis
4	Protein (N*6.25)	Not less than 48 percent by weight on a dry basis.
5	Crude fiber	Not more than 4.2 percent by weight on a dry basis.
6	Fat	Not more than 1.5 percent by weight on a dry basis
7	Total bacterial count	Not more than 50,000 per gm.
8	Coliform bacterial	Not more than 10 per gm
9	Salmonella bacteria	Nil in 25 gm
10	Hexane (Food grade)	Not more than 10.00 ppm

Source: FSSAI Manual

2. District Profiling

Zunheboto District is situated in the heart of Nagaland bounded by Mokokchung District in the North, Phek District in the South, Tensuang and Kiphire district in the east, and Kohima/Wokha district in the West. The whole area is mountainous and covered with dense forest with a total area of 1255 Sq.Km. As per the 2011 Census, the district is having total population of1,14,014. The District headquarters is 150 km away from the State Capital, Kohima.

2.1 and 2.2 Demographic and Socio-economic profiling

Table 30: Demographic profile of the district

Demographic Label	Value
Area	1255 Sq. Km
No. of Blocks	8
No. of Administrative Centre	14
No. of Villages	180 (2014 VLDI Report)
Coordinates	25.96667 Degree North.94.51667 Degree East.
Elevation	1.852M (6.076 ft)
Density	122 km per Sq.
Official Language	English and Sumi
Time Zone	IST (UTC+5:30)
Average Rainfall	33.8mm/ 13.142 inch

Table 30: Demographic profile of the district	
Demographic Label	**Value**
Average Climate	Summer- 80-90 Degree F(27-32 Degree C) Winter – 46.4 Degree F (8.1 Degree C)

2.3 Industrial Profiling

In the Zunheboto district, there are altogether around 95 industrial units. All kinds of small, large, and medium industries employ 190 people.

It is estimated that there are 240 to 260 unregistered food processing enterprises operating in the district with approximately 700 to 800 employees engaged in the food processing enterprises.

3. Cluster Analysis

3.1 Location of the cluster

Considering the production of the crop and the number of food processing units in the district, villages like Lumami, Satoi, Kawoto, Satami, Akuluto, Aichisaghemi, Tichipami, Netoi village, Xuivi, Hebolimi, Phishumi, Sukomi are the potential cluster for the soybean crop in the district. 21 units surveyed sample in the district are involved in the primary process activities like sorting, grading, and packaging of the soybean crop and selling through the existing channels. There are no common facilities like warehouses, cold storage, and pack houses in the district.

Clusters are available for other nonagricultural commodities however; there is no formal cluster for soybean processing. There is a strong need to form a cluster to bring together all processing units in the district under one cluster.

3.2 Turnover and Employment

From the primary survey, it is estimated that 22 lakhs to 33 lakhs worth of soya flour is processed in the local enterprises in the district. It is estimated that there are 10 to 15 tons of the total 9,810 tons of crops produced in the district are processed into soya flour in the district. Below 1% of the total crop produced in the district is processed into soya flour.

Employment:

From the primary survey, it is observed that 147 employees are working in the soybean process in the surveyed sample. Among the 147 employees working in soybean processing in the district, 80 employees are male and 67 employees are female.

It is estimated that there are 240 to 260 unregistered food processing enterprises operating in the district with approximately 700 to 800 employees engaged in the food processing enterprises.

3.3 Social Economic Profiles of the ODOP Producers

- It is observed from the primary survey that most of the unit owners belong to the age group of 35 to 60 years and their education level lies from intermediate to post-graduation
- Workers' age group lies between 20 years to 60 years and they have education up to intermediate.

3.4 Infrastructure:

3.4.1 Essential amenities required for the production of the product

Soy chunks

Table 31: Machines and types of equipment required for soya chunks processing (Capacity-1600 Kgs per day)

S. No	Equipment	Capacity	Cost (Lakhs)
1	Flat storage or Vertical silos	250 tons	5
2	Blender		1
3	Soya cooking extruder machine		5
4	Dryers		3
5	Cooling conveyor		2
6	Automatic weighing and packaging machine		1
	Total		**17**

Soya milk

Table 32: Machines and equipment required for Soya Milk processing: (Capacity-35000 Kg per annum

S. No	Machine name
1	Dry Bean Tank
2	Soya bean transferring machine
3	Soya bean soaking and washing machine
4	Grinding and separating machine
5	Soymilk cooking machine
6	Soymilk storage tank
7	Sugar dissolving machine
8	Soy milk twin filter machine
9	Homogenizer
10	Soymilk plate heat exchanger machine
11	Soymilk filling and sealing equipment

Figure 8: Machinery used for the soybean processing

1. Sorting and grading machine

2. Soybean drying machine

3. Soybean flour mill

4. Flour packaging machine

Source: Primary survey and India Mart

3.4.2 Existing infrastructure

There is no common infrastructure like cold storage and pack houses in the district for the processors. There is no incubation center and common processing center to encourage the new entrepreneurs to enter the food processing sector and to support the existing enterprises.

3.4.3 Additional infrastructure required

- **Common infrastructure facility (Cold storage and Reefer van)–**There is no common facility cold storage, reefer van, warehouses, and pack houses in the district. It is proposed to establish common infrastructure facilities like cold storage, warehouses, and pack houses for the processing enterprises in the district to reduce post-harvest crop losses.

- **Incubation center**- There is no incubation center for processing enterprises in the district. It is proposed to set up an incubation center in the district for training and handholding the existing and new processing enterprises in the district.

- **The machinery required-** Currently, only **a** few soybean growers in the district are involved in the primary processing of the crop, and the majority of the growers are selling the crop directly to the traders and the wholesalers in the district. It is proposed to provide advanced machinery like Dryer, sortex machine, sorting and grading machine, grinder, soybean soaking, and washing machine, soymilk cooking machine, storage tank, soy milk twin filter machine, and homogenizer and packaging machine at subsidized prices for the existing and new entrepreneurs.

- **Good quality Roads -** Good quality roads are the basic infrastructure required for the processing industry in the district. There is a lack of good road connectivity within the district and to other districts in the state. It is suggested to increase road connectivity to decrease post-harvest crop losses and to increase the sale of processed products to other districts in the state.

3.5 Raw materials

3.5.1 The vital raw materials

Soybean is the major raw material in oil extraction and soy meal is vital in soy chunk preparation. Approximately 13 to 15% of the oil is recovered from the 1 kilogram of soybean. 45% of the soya chunks are recovered from 1 kilogram of the soya meal.

3.5.2 The quality parameters being checked for all the raw materials

I) Agmark specifications:

The Agmark grade standards for Soybean notified under the Agricultural Produce (Grading and Marking) Act 1937 by the Central Government (Directorate of Marketing and Inspection) are given in below table:

Table 33: Grade designation and definition of quality of Soybean seeds								
Grade designation	Oil content on a dry basis percent by weight	The acid value of oil	Moisture content percent by weight	Damaged, discolored, insect-infested beans percent by weight	Immature, shriveled beans percent by weight	Splits, broken, cracked, beans by percent of the weight	Inorganic foreign matter percent by weight	Organic foreign matter percent by weight
Grade-I	20	3	10	1	2	5	0.5	0.5
Grade-II	18	4	12	2	3	10	0.5	0.5
Grade-III	15	6	12	3	5	20	0.5	1.5

General Characteristics:

Soybean shall be;

a) The mature, dried, clean, and wholesome seeds of the plant Glycine max (L) Merrill;

b) Of uniform size, shape, and color characteristic of the variety;

c) Free from mold, musty odor, or added coloring matter;

d) Completely free from admixture of any poisonous, toxic, harmful, or non-edible seeds like neem, argemone, khesari, castor, mahua, etc;

e) Free from pesticides/insecticide residue, except to the extent permissible under the PFA Rules, and shall not contain uric acid exceeding 100 mg/kg and mycotoxin including aflatoxin exceeding 30 micrograms per kilogram.

3.5.2 Whether the raw material is perishable

Soybean is semi-perishable.

Table 34: Perishable nature of the soybean value-added products		
S. No	**Product**	**Shelf life**
1	Soybean crop	6 Months to 8 Months
2	Soybean oil	6 to 8 Months
3	Soybean meal	18 Months
Source: Primary Survey		

3.6 Production Process

The detailed production process for Soybean oil is explained in point number 4.5 i.e. manufacturing process

3.7 Product Range

The list of value-added products of the soya bean is listed below:

- Whole dry Soybeans
- Fermented Soybean (Axoni)
- Soya chunks
- Soya milk
- Soya oil

3.8 Technology

Soybean Processing for Soymilk and By-product utilization using membrane technology:

The investigation was focused on developing an efficient protocol for the extraction of soymilk and effective utilization of its by-products, besides improving the understanding of the critical process steps involved. Wet grinding of hydrated soybean was carried out with a mixer grinder, stone grinder, and colloid mill which revealed that particle size had a profound effect on the protein recovery in the extracted milk. Greater particle size reduction was achieved with the mixer grinder and colloid mill owing to the type of predominant grinding forces involved (cutting and shearing) compared to the stone grinder (compressive). Examining the suitability of classical Kick's, Rittinger's, and Bond's laws developed for dry grinding revealed that they are applicable after the initial break up during wet grinding of soybean. During wet grinding, linoleic acid oxidizes in the presence of air catalyzed by lipoxygenase, and the reaction products cause objectionable beany or grassy flavor. Although lipoxygenase can be easily inactivated by thermal means, it leads to reduced protein solubility and recovery. In the present study, inactivation of lipoxygenase has been attempted by grinding at low and high temperatures and employing a chelating agent (curcumin). These approaches showed varying degrees of success and grinding soaked bean at 70 °C along with emulsified curcumin was the most effective approach in inactivating lipoxygenase to the extent of 95%, along with a matching protein recovery of 87% to that of conventional hot extraction. Besides, the fortified soymilk obtained in the process exhibited greater polyphenolic and antioxidant activities and reduced hexanal content signifying the multiple benefits. *Source: CFTRI*

3.9 Marketing

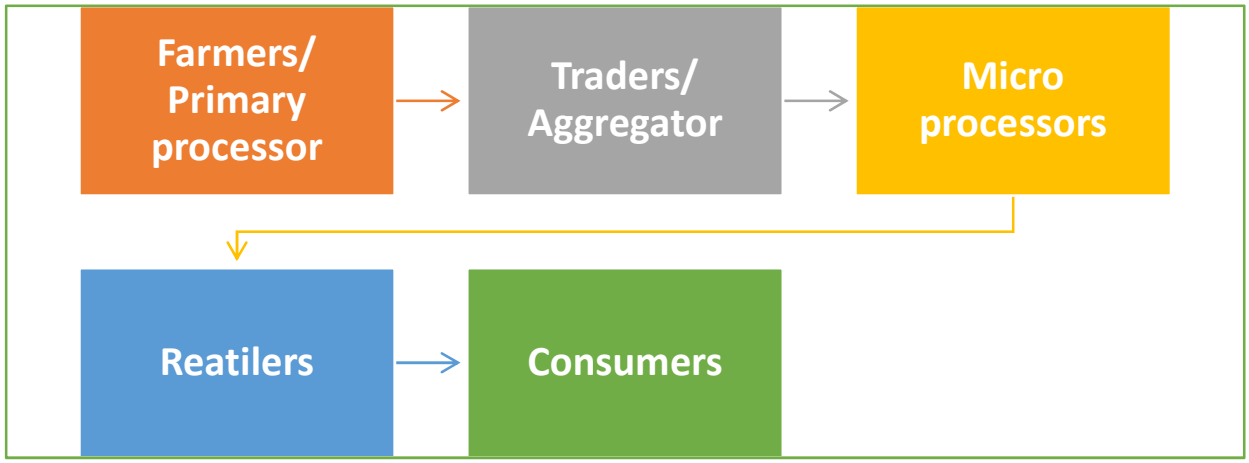
Farmers or traders are processing (primarily processing) the soybean and selling it to the local trader or the retail outlets or the consumer. There is no special marketing like an advertisement or digital

marketing by the processor in the district. None of the primary processing enterprises are selling products with a specific brand name.

Enterprises involved in secondary processing like soya flour are selling to local consumers through the retailers in the district.

From the primary survey, it is observed that almost 80 to 90% of the soya flour produced in the district is sold within the district through local retailers and approximately 10 to 20% of the produce is exported to other districts in the state through the wholesalers.

Figure 9: Existing sales channel of the produce in the district



3.10 Human Resource

From the primary survey, it is observed that 147 employees are working in the 21 surveyed enterprises among the total employees working in the soybean processing enterprises, 67 are female and 80 employees are male.

From the primary survey, it is estimated that there are 240 to 260 unregistered food processing enterprises operating in the district. It is estimated that approximately 700 to 800 employees are working in the unregistered food processing enterprises in the district.

3.11 Skill Development

There is a shortage of skilled labor in the soybean processing industry and there are no proper skill training facilities available in the district. It is proposed to provide training to the existing enterprises and new entrepreneurs on the primary processing and secondary processing (Soybean flour, soya milk, and soya chunks). Skill training is required regarding the use of advanced technology and machinery like Grading machine, sorting machine, drying machine, grinder, soybean soaking and washing machine, Soymilk cooking machine, Soya storage tank, Sugar dissolving machine, soya milk twin filter machine,

homogenizer, and soya milk filling and sealing machine. It is suggested to provide the training and skill development on creating the branding and marketing of the produce.

3.12 Testing

The majority of the traders and the farmers in the district are selling primary processed soybean crops and soybean flour without FSSAI registration. There are no testing facilities in the district. It is proposed to set up the testing lab in the proposed incubation center for the existing and new enterprises in the district. The FSSAI standards for the Soybean flour, soybean crop and other processed are mentioned in section 1.6 (Test done for the produce)

3.13 Institutional Support

NABARD:

Special long-term refinance scheme for promoting micro food processing activities:

Under the special refinance scheme, NABARD has decided to extend concessional long-term refinance to all eligible banks/ FIs at 4% to enable banks to accelerate capital formation in micro food processing enterprises.

The refinance will be sanctioned under the automatic refinance facility (ARF) which shall enable banks to obtain financial accommodation from NABARD, without going through the detailed pre-sanction procedure formalities. However, the banks have to maintain separate databases for lending to micro food processing activities.

Eligible activities:

The scope of micro food processing mat covers a wide range of post-harvest processing activities/ Value addition in primary products such as cleaning, grading waxing, packing, pulp and juices, pickles, squashes and sauces, flour milling, baking, noodles, honey, chips making, spices grinding, etc, The loan amount for setting up of micro processing unit would range from Rs. 1 lakh to a maximum of Rs. 25 lakhs for being eligible under the scheme.
The agricultural produce considered for processing may include-

- Mushrooms, Plantation crops, and other horticulture crops
- Poultry and meat, fish and other aquatic and marine products, and apiculture
- Herbs, medicinal and aromatic plants, minor forest produce, spices, condiments, etc.

Eligible beneficiaries:

The scheme will cover all the eligible beneficiaries across all states viz. individuals, FPOs, SHGs, JLGs, farmer's collectives, proprietorship firms, partnership firms, companies, etc. interested in setting up small food processing units.

Eligible institutions:

Eligible institutions shall be all commercial banks, SFBs, RRBs, Cooperative banks, and subsidiaries of NABARD under the scheme.

Margin:

As per credit underwriting standards of individual banks and RBI guidelines in this regard.

Interest rate:

The scheme envisages that the benefits of concessional refinance are passed on to the ultimate beneficiaries. Keeping this in view, the interest rate on this special refinance scheme is fixed at @4% per annum and the ultimate lending rate to be charged by banks/ FIs should not be more than six months MCLR+1% or EBLR+2.5% whichever is lower. NABARD reserves the right to change the interest rate from time to time.

Repayment:

The refinance shall be repaid within a maximum period of 5 years.

3.14 Support Infrastructure

There are no common infrastructure facilities and incubation centers in the district for processing enterprises. There is a measurable loss in soybean crop quality during transportation due to the lack of road connectivity within the district and to other states. Road connectivity needs to be improved with the initiatives from the state and central government in the district. The electricity and water supply need to be concentrated in the processing enterprises.

It is proposed to establish a common infrastructure facility and incubation center in the district for the handholding support of food processing enterprises in the district.

3.15 Financial Linkages

NRLM facilitates building a bridge for universal access to affordable cost effective reliable financial services to the poor through their SHGs and their federations. These include financial literacy, bank account, savings, credit, insurance, remittance, pension, and counseling in financial services.

Capitalizing institutions of the poor-

NSRLM provides Revolving Fund and Community Investment Fund (CIF) as Resources in Perpetuity to the institutions of the poor for meeting their credit needs for both consumption purposes and also for investment in livelihoods promotion. This fund is a corpus /capital resource for institutions of the poor. Largely this fund is used for on-lending to the SHGs for providing financial assistance. This also

strengthens their institutional and financial management capacity and builds their track record to attract mainstream bank finance.

- Revolving Fund (RF) is provided to SHGs as a corpus to meet the members' credit needs directly and as catalytic capital for leveraging repeat bank finance. RF is given to SHGs that have been practicing 'Panchasutra' (Regular meetings; Regular savings; regular inter-loaning; Timely repayment; and Up-to-date books of accounts).

- Community Investment Fund is provided as Seed Capital to SHG Federations at the Cluster level to meet the credit needs of the members through the SHGs/Village Level Organizations and to meet the working capital needs of the collective activities at various levels.

- Vulnerability Reduction Fund (VRF) is provided to SHG Federations at the Village level to address vulnerabilities like food security, health security, etc., and to meet the needs of the vulnerable persons in the village.

Access to credit-

NSRLM expects that the investment in the institutions of the poor would leverage the bank credit of at least Rs.1,00,000 /- accessible to every household in repeat doses over the next five years. For this, SHGs go through Micro-Investment Plan (MIP)/Micro Credit Plan (MCP) process periodically. MIP/MCP is a participatory process of planning and appraisal at household and SHG levels. The flow of the funds to members/SHGs is against the MIPs. The rural poor need credit at a low rate of interest and in multiple doses to make their ventures economically viable. To ensure affordable credit, DAY-NRLM has provided interest subvention for all eligible SHGs to get loans at 7% per annum from mainstream financial institutions. Further, an additional 3% interest subvention is available only on prompt repayment by SHGs in most backward 250 districts. Making poor the '*preferred clients of the banking system and mobilizing bank credit*' is core to the DAY-NRLM financial inclusion and investment strategy.

SHG Credit linkage-

To facilitate bank linkages, State Level Bankers' Committees (SLBC) have constituted an exclusive sub-committee for SHG bank linkages and financial inclusion in NSRLM activities. Similarly, District Level Coordination Committees and Block Level Coordination Committees review SHG-Bank linkages and NSRLM.

SHG members are fostered as Bank Facilitators (Bank Sakhi) to drive Financial Inclusion in their community. They facilitate close interaction between the community and the Bank Branch in addressing the financial needs of the SHGs, and for 100% recovery of loans through Community Based Recovery Mechanism (CBRM) positioned in the banks. CBRM is monitored by the 'Sub Committee on Bank Linkage and Recovery of Loans' under the Village Level Organization.

To ensure banking services is delivered at the doorstep of unbanked and underbanked area, SHG members are engaged as Business Correspondent (BC) as an alternate banking solution for the rural community.

NSRLM works towards increasing the portfolio of products of savings, credit, insurance (life, health, and assets), and remittance through the institutions of the poor directly or in partnership with mainstream financial institutions using various institutional mechanisms and technologies.

Source-"Nagaland State Rural Livelihoods mission", GoN.

3.16 Environmental Impact

There is no negative impact on the environment in processing soybean crops. There are no harmful bi-products released in processing the soybean flour, soya milk, and soya chunks in the district.

3.17 Cluster Actors

No skilled and semi-skilled Workers

Approximately, 147 workers are engaged in the soybean processing units out of which 45% of workers are females and 55% are male workers. None of the employees working in the food processing enterprises received any training. There are no training facilities available for food processing enterprises in the district.

Manufacturers

Soybean Processors are scattered throughout the district. There are no major soybean secondary processing enterprises (Soy chunks, soy milk, and soybean) operating in the district.

Unit Owners – approximately 21 enterprises are operating in the district. The majority of the units in the district are primarily involved in the primary processing of the produce like sorting, grading, and drying the produce.

Raw Material Supplier-

- Soybean Growers are the main raw material suppliers
- Wholesalers or traders in the village or nearby town supply the material to processing units in the district.
- A sufficient amount of raw material i.e. Soybean is available in the district

Enterprise Promotion Councils
An enterprise promotion council does not exist in the district.

Marketing Players

There are no major marketing players in the district. Farmers are selling the produce across districts and traders buy the produce from farmers and distribute it to other districts and states.

The other major players in India are

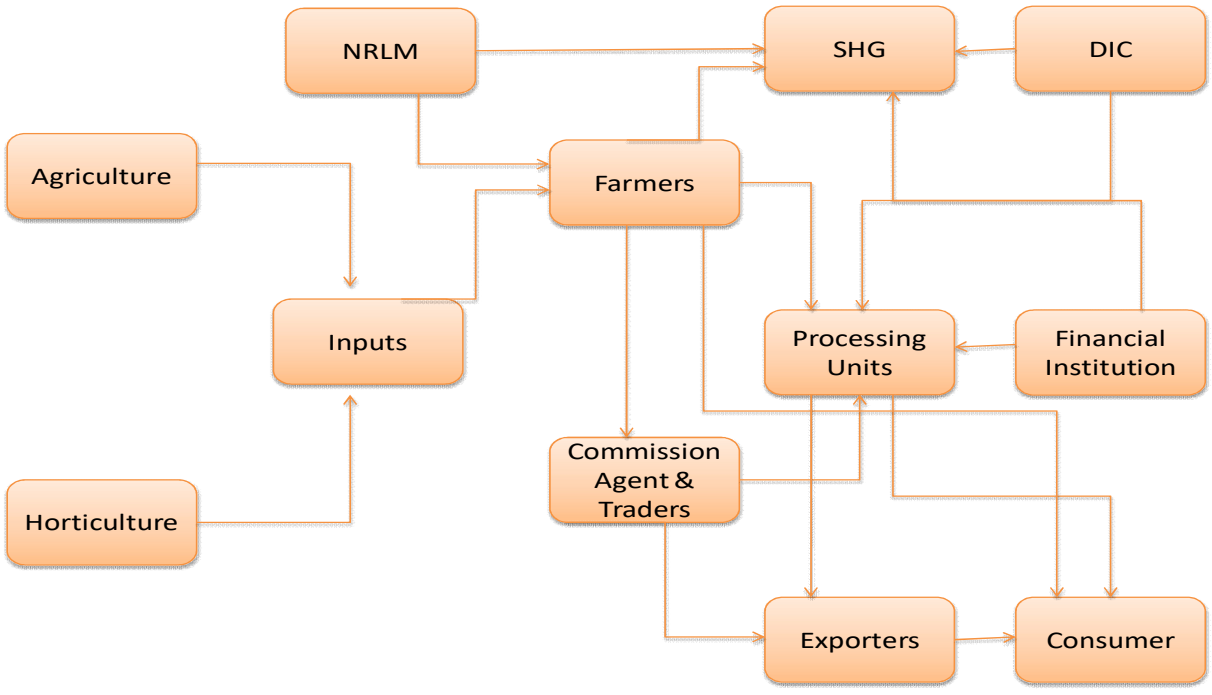
- DuPont Solae
- Northern Soy Inc.
- Whole Soy & Co.
- ADM Inc.
- Solbar Ltd.
- Cargill Inc.,
- The Scoular Company
- Linyi Shansong Biological Products Co. Ltd.

3.18 Existing Government Schemes

All schemes from MOFPI, Nagaland government, and PMFME are mentioned in detail in point number 2.1, 2.2 & 2.3 of this document.

3.19 Cluster Map

The below-mentioned chart implies the stakeholder involved in the cluster.



3.20 Value Chain

Villagers prefer to sell the produce at village level as profitability at village and towns are almost same. This is because of the difficulty in transportation that is time-consuming and costly reducing the benefits of sales at distant locations.

The market situations in Peren and Zunheboto are different due to the production and supply differences. In Zunheboto, villagers rarely sell soybean. Sales if any, mostly take place within the village. Rarely do producers bring soybean to local towns or Dimapur for sale.
The quantity brought for sale to local towns is low. Generally, the whole of it is sold off through retail; if any leftover is sold to the traders in the town.

Traders buy the product at a discount of around 30-40% of the retail selling price. There is an established sales channel through which soybean is exported from the state. Aggregators at district towns collect the product and sell it to traders in Jorhat; who in turn sell it to traders in other parts of India mostly northern India. There is a minimal quantity value addition to soybeans like oil extraction and soy meal production in Zunheboto.

Table 35: Value chain of the produce

S. No	Particulars	Activities	Purchasing price (Per Kg)	Selling price (Per Kg)	Difference in (Rs)
1	Farmer	Cultivation		20-25	
2	Trader	Primary processing, Storage, and Transport	20-25	35-40	15-20
3	Microprocessor	Processing (45% soya chunks from soya meal)	45-50	200-210	70-80
4	Retailer	Storage and distribution	200-210	210-220	5-10

Source- Primary survey

3.21 Product Cost analysis

It is estimated that INR 120.4 expenditure was incurred in processing 1-kilogram Soya chunks. Revenue generated by selling the processing soya chunks is INR 200. Net profit incurred in the processing of 1 Kg chunks is INR 79.6 with a B: C ratio of 1.7. 450 grams of soya chunks are recovered from 1 kilogram of soya meal.

Table 36: Product cost analysis

S. No	Particulars	Cost Per Kg
A	**Expenditure**	
I	**Variable cost**	
i	**Raw material**	

Table 36: Product cost analysis		
S. No	**Particulars**	**Cost Per Kg**
	Soya meal (45% of soya chunks recovery)	40
	Soybean	88
	Total	**88**
ii	Wages	3.0
iii	Electricity bill	3.2
iv	Packaging material	20
v	Transportation (Loading and Unloading charges)	5
	Total Variable cost	119.2
II	Miscellaneous charges	**1.2**
	Total expenditure (Variable cost+ Miscellaneous Charges)	120.4
B	**Revenue**	
	The selling price of the pickle	200
	Revenue	200
	Profit (Revenue- Expenditure)	79.6
	B: C Ratio	**1.7**
Source: Primary Survey and NIFTEM Manual		

3.22 SWOT Analysis

Table 37: SWOT analysis	
Strength	**Weakness**
• Organic production of the soybean crop in the district. • Health benefits associated with the consumption of the products. • Strong domestic demand for soya milk, soya flour, and soya chunks.	• The industry is small, unorganized, and scattered • Only the primary form of processing i.e. cleaning, grading, sorting and packaging of dry soybean is there. • No awareness about government support & schemes for the processors in the district • Lack of advanced machinery like a dryer, sortex machines, oil mills, etc • No formal organization or cluster available for Soybean processing units
Opportunities	**Threats**

• Opportunity to create the brand for the pickles produced in the district. • Opportunity to upgrade the existing unit with the support of schemes implemented by state and central government. • Tremendous scope for secondary processing like Soybean oil, soya milk, soya paneer, flour, etc • Products can be sold through exhibitions, online stores, and distributor networks. • There is scope to cater to foreign markets for the export of the value-added products of Soybean	• Competition from the settled brand in the market • The quality and safety of the product are a challenge. • Huge fluctuation in the raw material cost.

4. Benchmark Studies

Soybean Processing-A Suitable Remunerative Enterprise

Smt. Suman Sharma, Vill: Balita, Tehsil: Ladpura, Dist: Kota, Rajasthan, Contact No.9460853746

Training and Motivation:

Smt. Suman Sharma started the processing unit in 2014. She participated in a one-month training program on food processing and value addition of regional crops in the year 2014 organized at Krishi Vigyan Kendra, Kota. During training, she learned about processing techniques, value addition, packaging, marketing, labeling, and cost calculation of products.

After completion of training, she engaged herself in experimental work for 2-3 months for standardization of her processed products of soybean and Gooseberry, finally established her Small Unit of Soybean Processed products viz. Soybean Laddu, Nuts, Flour, etc.

Achievements:

At the time of starting the venture of Soybean processing Smt. Suman Sharma was having her saving of Rs. 2 lakhs, which become her capital investment, a very crucial resource for her dare and adventure. She used the rooftop area of her house converted to its a hall of 20'x 15' by covering it with a tin shed to install the processing machinery and working space.

She constituted an NGO of 100 women entrepreneurs named "Siddi Vinayak" and the Self-Help Group "RISHI-TANVI" for food processing entrepreneurship development. She procured 'FSSAI' number and 'Shop Act Number, to become a registered entrepreneur.
She formulated group sales processed products on an order basis as home delivery and also exhibited products in different meals and now she is earning about Rs.40, 000per month.
As a master trainer, she attended more than 75 training programs and trained more than 1000 women, and earned approximately Rs. 1-1.5 Lakhs in a year.
She has also demonstrated her products at the Organic festival Delhi (organized by the Ministry of Food Processing Industry) and earned more than Rs.30,000/-

Awards/Recognition:

She got an appreciation award as a women entrepreneur from former Agriculture Minister Sh. Prabhu Lal Saini; Mayor of Kota; and FEGC, Jaipur for her achievements.

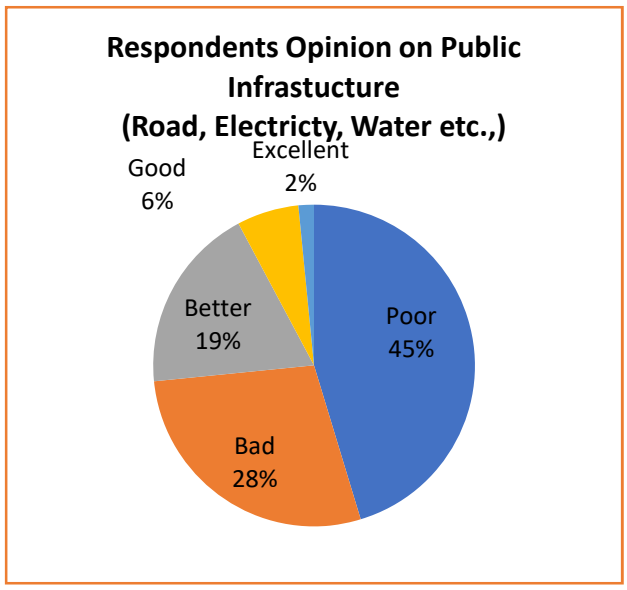
She has been invited to share her success with the masses on AIR, Kota and DD, Kisan channels.

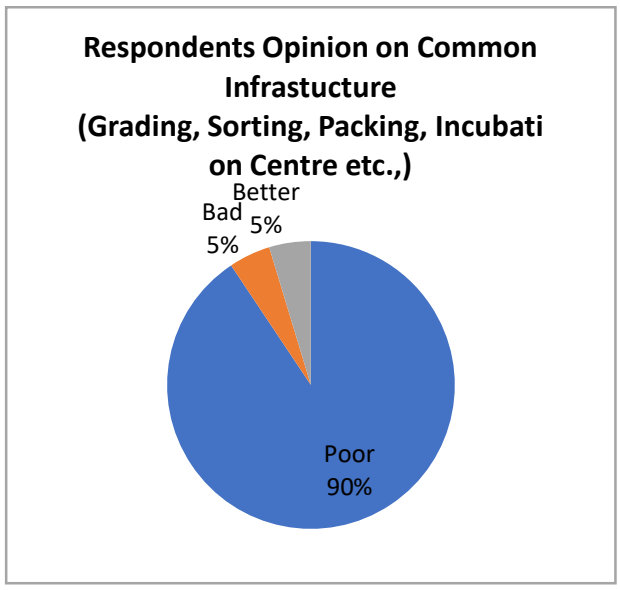
5. Stakeholder Consultation

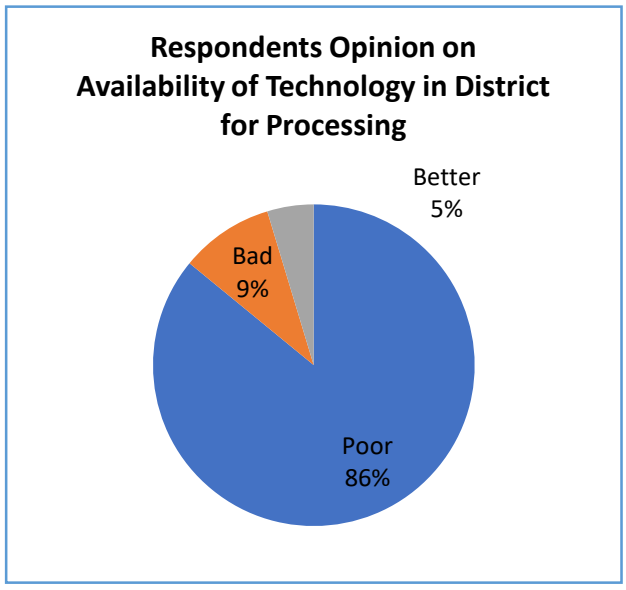
5.1 Individual Meetings –

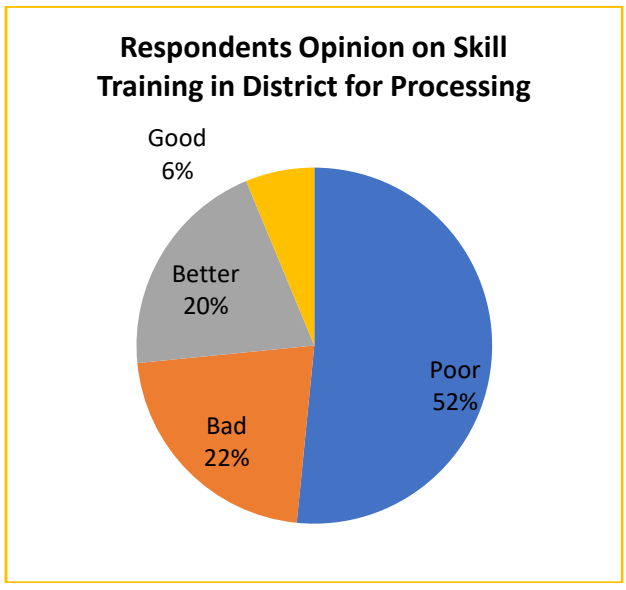
A Survey of 21 Soybean processing units is done through face-to-face meetings. To understand their perspective about business & other factors related to processing industries. All the information mentioned in the questionnaire is filled in individual meetings.

Below pie chart is prepared based on the opinion of respondents on existing public infrastructure, common infrastructure, availability of technology, and skill training for processing ODOP products.









Agenda Points & discussions

The points discussed are;

- Availability of technology
- Scope for processing
- Common Infrastructure facilities
- Logistic
- Branding and Marketing

Minutes of Meeting with Various Stakeholders;

- The processing is happening at a very small scale and small processors have adopted the traditional method of processing.
- The availability of new technology or modern method of processing (using semi-automated and automated machinery) is lacking.
- There is no availability of common infrastructure facilities such as incubation center, grading, sorting, and packing units
- Transportation is a huge problem in the district
- The marketing of products is a challenge in the district due to logistic problem
- There is a high requirement for skill training and development for micro and small processors
- The majority of the micro and small processors are selling value-added products without brand. They require training and exposure to build the brand, logo, and knowledge on labeling and packing of the produce.

6. Need Assessment and Gap Study

Table 38: Need assessment and Gap Study	
Gaps	**Remarks**
Secondary Processing	• Soybean processing in the district is only confined to primary processing i.e. drying, cleaning, grading sorting, and packaging of the dry soybean only. • It is suggested to focus on other secondary processing lines like Soybean oil, flour, soya milk, soya paneer, and soy chunks. • It is suggested to promote Soybean as 'Organic' produce and can cater premium segment of the market.
Technology	• There is no use of advanced technology or machine-like grain dryers, moisture Analyzers, Double sortex machines, Oil mills, Flour machines, mixtures, sorting, and grading machines. • It is suggested to provide the machinery for the processing enterprises at subsidized processes to increase the quantity of crop processing in the district.
Infrastructure	• The good quality road is the basic infrastructure required for the processing enterprises in the district. • Due to poor quality of roads, transportation for the product is getting affected. • It is suggested to construct better roads to increase the exporting of the soybean crop and soybean-based from the districts to other districts and states.
Testing Facilities	• There are no proper testing labs in the Zuhneboto district. The majority of the enterprises in the district are not certified by the FSSAI. It is proposed to set up the FSSAI testing lab in the district.
Skill Training	• There is a shortage of skilled labor in the processing industries. • The areas to be covered in Training and marketing are the Standardized process of processing, Packaging of the produce, branding, and marketing of the processed products, Handling the advanced machinery and equipment like grain dryers, moisture Analyzers, Double sortex machines, Oil mills, Flour machines, mixtures, sorting and grading machine and processing the products according to the FSSAI standards.
Marketing	• The majority of the products processed in the district are consumed in the district itself. There is a strong need to market the product through various channels like events, exhibitions, online marketing, etc. • It is proposed to create a brand and market for the products in the district. • For branding, there is an umbrella brand, being driven by NSAMB, i.e "Naturally Nagaland", which is a way of promoting the "Organic" brand of

Table 38: Need assessment and Gap Study	
Gaps	**Remarks**
	Nagaland. Soybean needs to be pushed aggressively within this brand, (which is not seen much now), and also independently, promoting the strengths of Nagaland Soybean.
Cluster	• All the food processing industries in the district are scattered in the district. There is no formal cluster for the soybean commodity in the district as there is no existing infrastructure. • There is enough scope for soybean processing in the district due to the abundant availability of raw materials and demand for soybean milk, soybean chunks, and soybean oil in the district and in the country.

Rating of Response Count (Based on Primary Survey)

Rating 1 is considered as poor and Rating 5 is considered excellent.

S. No	Particular	Response Count					Total
	Ratings	**1**	**2**	**3**	**4**	**5**	
1	Public infrastructure such as roads for backward and forward linkages	7	10	4	0	0	21
2	Access to common facilities such as grading, sorting, packaging, cold chain facilities, etc.	19	2	0	0	0	21
3	Access to testing facilities	21	0	0	0	0	21
4	Compliance with standards and the frequency of inspections from the safety regulators	6	8	7	0	0	21
5	Skill training needs	7	8	6	0	0	21
6	Manufacturing practices	8	7	5	1	0	21
7	Technologies Available	20	0	1	0	0	21
8	Access to finance	2	16	3	0	0	21
9	Access to mentorship/ service	1	4	11	5	0	21
10	Awareness of Govt Policies among micro /small manufactures	1	6	7	6	1	21
11	Awareness of ODOP products in the District	20	0	1	0	0	21
12	Marketing/sales facilities	17	3	1	0	0	21
13	Facilities for the workers	21	0	0	0	0	21

Public infrastructure such as roads for backward and forward linkages – Most of the respondents rated public infrastructure facilities are not good in the district. It is suggested to provide better road connections within the district and outside the district to reduce crop losses in the district.

Access to common facilities such as grading, sorting, packaging, cold chain facilities, etc. – The majority of the respondents suggested that there are no common facilities like cold storage, reefer vans, and pack houses in the district.

Access to testing facilities – The majority of respondents mentioned there is a need for testing facilities in the district.

Compliance to standards and the frequency of inspections from the safety regulators – The majority of respondents expressed that they are not undergone any kind of inspection concerning safety regulators.

Skill training needs– The majority of the respondents suggested that there is a need for training facilities in the district to train the existing and the new employees in the food processing enterprises.

Technologies Available – There is a lack of technology and a lack of advanced machines in the units.

Access to finance – Financial assistance is very important almost for every respondent to expand their existing units as well as to purchase advanced machines.

Access to mentorship/ service – Most of the respondents mentioned the need for mentorship to upgrade their business and explore the new market. It is suggested to establish an incubation center in the district to support the existing and new enterprises in the district.

Awareness of Government Policies among micro /small manufacturers –There is no awareness of any government schemes promoting food processing policies in the district. It is suggested to advertise and promote the schemes and the policies implemented in the district.

Awareness of ODOP products in the District –The majority of respondents are not aware of ODOP in the district. It is suggested for the DIC advertise and promote the food processing policies supporting the enterprises in the district.

Marketing/sales facilities – Most of them expressed that they need proper training in marketing facilities and branding facilities to improve their business.

7. Recommendations

7.1 Project strategy and Interventions

Context of ODOP Processing (Soybean)

As part of our primary survey, we interviewed the above 21 food processing units, whose primary activity is soybean production, drying, sorting, grading, and packing. The core business activity of the processing units in the district are drying, sorting, grading, and packing the product and selling the product to the local retailer and traders in the district and other districts. Only 1% of the total crop produced in the district is processed into other commodities like soya flour and soya meal. Few enterprises are exporting the primarily processed soybean to other districts and other states.

Table 39: Proposed number of enterprises

S. No	Particulars	Commodities	Number of units
1	**ODOP (Existing Enterprises-Primary processing)**	Soybean based products	21
2	**Non-ODOP (Individual Potential Enterprises)**	Pickles- Naga chili, bamboo pickle, Fish pickle, and Meat pickle. Coffee-based products. Kiwi-based products Gooseberry-based products. Potato-based products Bakery based products	87
3	**Non-ODOP (Group Potential Enterprises)**	Pickles- Naga chili, bamboo pickle, Fish pickle, and Meat pickle. Coffee-based products. Kiwi-based products Gooseberry-based products. Potato-based products Bakery based products	11
	Source-Primary Survey		

Proposed fund allocation:

A total of INR 25 Cr. fund is proposed for the Zunheboto district for the up-gradation of 119 existing and new units in the district. Among the total fund, INR 15.35 Cr. fund is proposed to upgrade the 108 individual units and 1.53 Cr. fund is proposed to upgrade the 11 groups in the district. It is proposed to establish one incubation center and one common infrastructure in the district. INR 1.25 Cr. and 0.12 Cr. fund is proposed for the branding and marketing and training and mentorship for the existing and new potential processing enterprises in the district.

Intervention	Target	Amount (Cr.)
Capital investment in plant and machinery (Individual units)	To upgrade and scale up in the production process for 108 Micro Units (The average fund required per unit is 14.2 lakh)	15.35
Capital investment in plant and machinery (Group units)	To upgrade and scale up the production process for 11 Groups (The average fund required per unit is 12.7 lakh)	1.53
Incubation center	One incubation center (IC) is proposed for the district. Cost per IC 2.75 Cr.	2.75
Common infrastructure	One common infrastructure facility (CIF) is proposed for the district. Cost for the CIF 4.0 Cr.	4
Branding and Marketing	Common Branding and Marketing for both Individual units and Groups	1.25
Training and Mentorship	Training and Mentoring for Entrepreneurship. Training on New Technology for a total of 119 individuals. (2 people to be trained from each enterprise/group)	0.12
Total		**25**

Proposed Government assistance under the SLUP:

A total of INR 25 Cr. fund is proposed for the Zunheboto district for the up-gradation of 119 existing and potential new units in the district. INR 10.77 Cr. is expected government assistance under the SLUP from the total fund proposed for the up-gradation of the food processing units.

Table 48: Proposed Government assistance under the SLUP

Intervention	Target No. of units	Project cost per unit (Cr.)	Total Cost (Cr.)	Subsidy per unit	Govt. assistance (Cr.)
Capital Investment in Plant and Machinery (Individual units)	108	0.14	15.35	35%	5.38
Capital Investment in Plant and Machinery (FPO/SHG/ Cooperatives)	11	0.14	1.53	35%	0.53
Common Infrastructure	1	4	4	35%	1.40
Incubation Cum Custom Hiring Centre	1	2.75	2.75	100%	2.75
Branding and Marketing (Total no. of Units/group)	119	0.010	1.2	50%	0.6
Training and Mentorship (No. of the individual)	119	0.00010	0.12	100%	0.12
Total			**25.00**		**10.77**

7.2 Vision Statement & Key Objectives for SLUP

Vision Statement: To increase the quantity of Soybean processing from the existing below 1% of the total crop processing to 5 to 10% of the total crop production in the coming 3 to 5 years.

Objectives:

- Training and financial support to the existing individual and group units in the district.
- Promoting new enterprises in cardamom processing.
- Creating branding and marketing opportunities for processed products in the district.
- Creating a common facility center for the processing units.

7.3 Strategy for Integrated Development

Integration of stakeholders such as agriculture, horticulture, marketing, financial institution, industries, associations, testing agencies, traders, farmers, and processors are necessary to start the cluster.

Particulars	Requirement	Supporting Department/Agencies
Marketing	• Training and Skill Development on branding and marketing of the processed products and packing of the produce. • Qualitative and Quantitative testing of the produce.	• DIC could conduct training on the branding and marketing of the processed product. • FSSAI should involve in the certification and licensing of the processing enterprises.
Infrastructure	• Common infrastructure for the primary processing (Sorting, grading, cold storage, and pack houses) and secondary processing for the processing enterprises in the district.	• Support from DIC, the state agriculture department and financial institutions are required for the establishment of the required infrastructure.
Workers	• Training on post-harvest management, standardized process of processing, and handling the machinery and equipment to the employees in the individual and group enterprises.	• DIC should train the workers in handling machinery. • Agriculture, Horticulture, and NRLM could train the workers on post-harvest management and processing technology.

7.4 Proposed Interventions

Table 40: Proposed interventions

S. No	Particulars	Recommendations	Cost (Cr.)
1	Infrastructure	Proposed one incubation center in the district with 3-4 processing lines and hand-holding support for the existing and new enterprises in the district.	2.75
2	Technology	Proposed up-gradation of the 119 enterprises in the district (Group and Individual units)	15.3
3	Common facilities	Proposed one common facility center and one incubation center in the Zunheboto district to increase the quantity of crop processing in the district and to reduce crop loss post	4.00

Table 40: Proposed interventions			
S. No	Particulars	Recommendations	Cost (Cr.)
		harvesting.	
4	Marketing support	Proposed training on marketing and branding of processed products in the district.	1.2
	Total		**23.25**

8 Key Impacts

Table 41: Key Impacts	
Particulars	**Impact**
Opportunity to increase processing activity	• Through support under the PMFME scheme, there is a possibility of an increase of 10% to 15% in the processing of total crop production in the district in the next three years
Employment	• Each unit will employ 4-5 members on average i.e. approximately 450-600 employments will be created in the next three years with the help of the PMFME scheme.
Income	• Through proper branding and marketing, the net profit of units will increase by 25%-35 %
Reduce waste	• Through processing and common infrastructure, farm-level waste might reduce to 5 % from current 10 %
Better Profits	• Micro Units can expect a 25 % increase in profits with Better market linkages and Branding
Better Price Realization	• An export window will be opened to micro and small entrepreneurs. Better price realization can be observed by micro and small entrepreneurs' by exporting turmeric powder to major importing countries in the world.

Annexure:

S. No	Name of the FPO	Location	Contact details	Total No. of Registered members	Produces/ Products manufactured
1	Aghabo Farming Coop Soc Ltd. Nl/6509 Dt. 28.2.08	Ghuvishe Village/Zbto	Shri.Kashito yeptho Ph. no-9436008833	25	Fruits/Veg processing
2	Awomi Agri-Allied Coop.Soc Ltd. Nl/8009 Dt. 20.1.15	Surumi Village /Zbto	Shri. Katovi Awomi Ph.no-9436423658	20	Grain processing
3	Nikivipu Farming Coop. Soc Ltd. Nl/6540 Dt. 04.9.08	Baimho Village/Zbto	Shri. Hotokhu Ph.no -8131889901	30	Fruits/Veg processing
4	Skyno Farming Coop. Soc Ltd. Nl/6992 Dt. 03.3.11	Natha Old Village/Zbto	Shri. Mughato Ph.no-.9615877338	25	Meat & poultry
5	Excel Agri Allied Coop.Soc Ltd. Nl/7278 Dt. 21.11.12	Police reserve Zunheboto	Shri. Omeka Ph.no -9862775635	30	Grain/Fruits processing
6	Hill Piggery Coop.Soc ltd Nl/7003 Dt. 23.5.11	Sukhalu Vill/Zbto	Shri.Tokato yeptho Ph.no-7005861376	25	Meat & poultry
7	Pughokivi Agri-Allied Coop. Soc Ltd. Nl/7749 Dt. 15.7.14	Lukikhe Vill/Zbto	Smti. Kiyeli Ph.no-8974156435	30	Fruits/Veg processing

Total Number of Cooperative Societies as On 30.01.21.

S. No	Type of Society	Kma	Dmp	Mkg	Tsg	Wka	Zbto	Phk	Mon	Peren	Kpre	Lglg	Mba	Pftr	Stk	Total
A		**State Level Societies**														
1	Nagaland State Cooperative Bank Ltd.		1													1
2	MARCOFED Ltd.		1													1
3	Nagaland State Coop. Union		1													1
4	Nagaland Apex Weavers Federation		1													1
5	Nagaland State Piggery Federation		1													1
6	Nagaland State Dairy Federation	1														1
7	The Nagaland State Entrepreneurs Associates Thrift & Credit Coop. Federation Ltd.	1														1
		2	5													7
B		**District Level Societies**														
1	Kohima Dist. Milk Union	1														1
2	Dimapur Dist. Milk Union		1													1
3	Mokokchung Dist. Milk Union			1												1
		1	1	1												3
C		**Primary Cooperative Societies (District Wise)**														
1	Lamps C.S. Ltd.	-	1	-	-	-	-	-	-	-	-	-	-			1
2	Consumer C.S. Ltd.	68	24	24	31	9	25	21	12	6	11	2	7	1	-	241
	1. Petrol Pump C.S. Ltd.	-	-	1	-	-	-	-	-	-	-	-	1	-	-	2
3	Service C.S. Ltd.	-	37	16	-	9	4	2	1	6	-	-	4			79
	Institution C.S. Ltd.	-	1	-	-	-	1	-	-	-	-	-	-			2
	Transport C.S. Ltd.	-	2	1	2	-	-	-	-	-	-	-	-			5
	Canteen C.S. Ltd.	-	-	1	-	-	-	-	-	-	-	-	-			1

S. No	Type of Society	Kma	Dmp	Mkg	Tsg	Wka	Zbto	Phk	Mon	Peren	Kpre	Lglg	Mba	Pftr	Stk	Total
	Education & Training C.S. Ltd.	1	-	-	-	-	-	-	-	-	-	-	-			1
	Dry Cleaners	1	-	-	-	-	-	-	-	-	-	-	-			1
4	Multi Purpose C.S. Ltd.	854	974	320	249	426	287	231	97	104	160	35	118			3855
5	Marketing C.S. Ltd.	10	28	19	28	5	9	13	3	2	5	1	1			124
	Trading	-	-	1	-	-	-	-	-	-	-	-	-			1
6	Weaving & Handloom/Knitting /Handicraft /Industrial C.S. Ltd.	127	155	37	49	43	76	34	40	22	26	12	7	-		628
7	Dairy C.S. Ltd.	37	58	13	25	6	20	30	17	7	9	1	2		1	226

List of SHGs in Zunheboto District

S. No	Name of The SHG	Location	Contact Details	Produces/ Products Manufactures	Marketing Details of Produce/Product	Scale of Production (In MT)
1	Jukucho SHG	Ghukiye Village(Sathaka)	7629840421	Chilli Powder, Dried Wild Fruit	Selling To Group Members And Within The Village	15 Packets, 30 Packets
2	Akitomi SHG	-Do-		Dried Goose Berry	Selling To Group Members And Within The Village	85 Packets
3	Lashikami SHG	-Do-		Chili Powder	Selling To Group Members And Within The Village	20 Packets
4	Huthu SHG	-Do-		Dried Gooseberry	Selling To Group Members And Within The Village	50 Packets
5	Aza Lothemikua	-Do-		Dried Wild Berry	Selling To Group Members And Within The Village	20 Packets
6	Azalimi	-D0-		Dried Wild Apple	Selling To Group Members And Within The Village	30 Packets
7	Nimeka	-Do-		Chili Powder, Dried Wild Apple	Selling To Group Members And Within The Village	20 Packets 25 Packets
8	Azukini	Zungti (Sathaka)	9862622050	Dried Wild Fruit	Selling To Group Members And Within The Village	40 Packets
9	Topeni	-Do-	7085476757	Dried Wild Fruit	Selling To Group Members And Within The Village	100 Packets
10	Pekukho	-Do-	8787821590	Dried Goose Berry	Selling To Group Members And Within The Village	40 Packets
11	Xakiqhe	-Do-	8119984847	Dried Wild Apple	Selling To Group Members And Within The Village	20 Packets
12	Vuni	Sukhai (Sathaka)	8730903104	Dried Wild Apple	Selling To Group Members And Within The Village	170 Packets

S. No	Name of The SHG	Location	Contact Details	Produces/ Products Manufactures	Marketing Details of Produce/Product	Scale of Production (In MT)
13	Amutasa	-Do-	8132910380	Dried Gooseberry, Dried Wild Apple, Dried Chili	Selling To Group Members And Within The Village	120 Packets, 70 Packets, 80 Packets
14	Lichuku	-Do-	8974373815	Dried Wild Fruit, Dried Goose Berry, Chili Powder	Selling To Group Members And Within The Village	80 Packets, 80 Packets, 20 Packets
15	Limeka	-Do-	9862027310	Dried Chow Chow, Dried Gooseberry	Selling To Group Members And Within The Village	80 Packets, 50 Packets
16	Pipiqa	-Do-	9366467690	Dried Goose Berry, Wild Fruit And, Wild Apple	Selling To Group Members And Within The Village	50 Packets, 60 Packets, 70 Packets
17	Azakivi	Shoipu (Sathaka)	9863224966	Dried Wild Fruit And Goose Berry	Selling To Group Members And Within The Village	15 Packets, 20 Packets
18	Thu-Uni	-Do-	8731834036	Powder Chinese Gall	Selling To Group Members And Within The Village	10 Packets
19	Toni	Stakha Village (Satakha)	9862882508	Dried Wild Fruit, Goose Berry And Jam	Selling To Group Members And Within The Village	30 Packets, 10 Packets, 5 Bottles
20	Kutubokivi	-Do-	9383206107	Dried Wild Fruit, Dried Chilies	Selling To Group Members And Within The Village	30 Packets, 30 Packets
21	Huthuni	-Do-	7629005283	Dried Wild Fruit	Selling To Group Members And Within The Village	10 Packets
22	Nilo Kivi	Hoishe (Sathaka)	9366495349	Dried Gooseberry And Chilies	Selling To Group Members And Within The Village	80 Packets, 50 Packets
23	Aza Kivi	-Do-		Dried Wild Apples And Chilies	Selling To Group Members And Within The Village	50 Packets, 60 Packets
24	Nimqo Kivi	-Do-		Dried Wild Fruits	Selling To Group Members And Within The Village	140 Packets
25	Nighalimi	-Do-		Dried Wild Apple	Selling To Group Members And	40 Packets

S. No	Name of The SHG	Location	Contact Details	Produces/ Products Manufactures	Marketing Details of Produce/Product	Scale of Production (In MT)
					Within The Village	
26	Nikivipu	-Do-		Dried Chilies	Selling To Group Members And Within The Village	40 Packets
27	Aloke	Shena Old (Sathaka)	8131880396	Dried Chilies	Selling To Group Members And Within The Village	30 Packet
28	Tono	-Do-		Dried King Chilies	Selling To Group Members And Within The Village	20 Packets
29	Akusami	-Do-		Dried Gooseberry	Selling To Group Members And Within The Village	50 Packet
30	Mughape	-Do-		Passion Fruit Juice	Selling To Group Members And Within The Village	50 Bottles
31	Kuposhuxulu	Zhekiye(Sathaka)	7005845189	Dried Chilies	Selling To Group Members And Within The Village	7 Packets
32	Nipavi	-Do-		Dried Wild Fruit	Selling To Group Members And Within The Village	50 Packets
33	Kivi	-Do-		Dried Wild Apple And Gooseberries	Selling To Group Members And Within The Village	30 Packets, 50 Packets
34	Akupu	-Do-		Dried Gooseberries	Selling To Group Members And Within The Village	70 Packets
35	Kulakishi	-Do-		Dried Chilies	Selling To Group Members And Within The Village	10 Packets
36	Vipani	Lukhai (Sathaka)	6009901012	Dried Wild Fruit	Selling To Group Members And Within The Village	45 Packet
37	Toluni	-Do-		Dried Wild Apple	Selling To Group Members And Within The Village	20 Packet
38	Ninepa	-Do-	7005009170	Dried Gooseberries	Selling To Group Members And Within The Village	30 Packet

S. No	Name of The SHG	Location	Contact Details	Produces/ Products Manufactures	Marketing Details of Produce/Product	Scale of Production (In MT)
39	Nikivipu	Shoixe (Sathaka)	9862440842	Fermented Bamboo Shoot And Chinese Gall Powder	Selling To Group Members And Within The Village	4kg, 4kg
40	Atsaibo	-Do-		Gooseberry Juice And Dried	Selling To Group Members And Within The Village	5 Bottle, 5 Kg Dried
41	Asubo	-Do-	8575364051	Dried Wild Fruit	Selling To Group Members And Within The Village	50 Packets
42	Alokivi	-Do-		Lemon Juice	Selling To Group Members And Within The Village	5 Bottle
43	Tsughu Sa	Nunumi (Sathaka)		Dried Gooseberry And Wild Berries	Selling To Group Members And Within The Village	10 Packet, 10 Packet
44	A-Sukuto	-Do-		Dried Wild Berries	Selling To Group Members And Within The Village	19 Packets
45	Azalimi	-Do-		Dried Wild Fruit	Selling To Group Members And Within The Village	40 Packets
46	Amulimi	-Do-		Dried Wild Fruit	Selling To Group Members And Within The Village	25 Packets
47	Hukuthu	Tukunasa(Sathaka)		Dried Wild Fruit	Selling To Group Members And Within The Village	100 Packets
48	Xakiqhe	-Do-		Dried Wild Berry	Selling To Group Members And Within The Village	35 Packets
49	Jukucho	-Do-		Chinese Gall Powder	Selling To Group Members And Within The Village	20 Packets
50	Kikimiye	-Do-		Dried Gooseberry And Wild Fruit	Selling To Group Members And Within The Village	80 Packets
51	Kuqhalu	-Do-		Dried Wild Fruit	Selling To Group Members And Within The Village	80 Packets

S. No	Name of The SHG	Location	Contact Details	Produces/ Products Manufactures	Marketing Details of Produce/Product	Scale of Production (In MT)
52	Aiko	Vishepu (Sathaka)		Dried Wild Fruit	Selling To Group Members, Town And Within The Village	150 Packets
53	Alokivi	-Do-		Plum Jam	Selling To Group Members, Towns And Within The Village	15 Bottles
54	Nikivipu	Shena New (Sathaka)		Dried Gooseberries	Selling To Group Members, Towns And Within The Village	130 Packets
55	Phukhube Paza	Ustomi (Sathaka)	7627962324	Dried King Chilies	Selling To Group Members, And Within The Village	20 Packets
56	Kimiye Kini	-Do-	8575797852	Dried Gooseberries	Selling To Group Members, And Within The Village	100 Packets
57	Nikuphu	-Do-	8731829064	Dried Wild Fruit	Selling To Group Members, And Within The Village	30 Packets
58	Lapiye	-Do-	9383148368	Chinese Gall Powder	Selling To Group Members, And Within The Village	50 Packets
59	Lajupu	-Do-	8415831069	Tapioca Chips	Selling To Group Members, And Within The Village	20 Packets
60	Akikili	-Do-	---	Tree Bean Pickle	Selling To Group Members, And Within The Village	20 Bottle
61	Xakiqhe	Xuivi (Sathaka)	8974100598	Dried Wild Fruit	Selling To Group Members, And Within The Village	20 Packets
62	Aqhakito	-Do-	7085188918	Dried Wild Apple	Selling To Group Members, And Within The Village	40 Packets
63	Elihe	-Do-	8974453640	Dried Wild Fruit	Selling To Group Members, And Within The Village	10 Packet
64	Kimiyekini	-Do-	8974447097	Dried Wild Apple	Selling To Group Members, Within The Village	30 Packets

S. No	Name of The SHG	Location	Contact Details	Produces/ Products Manufactures	Marketing Details of Produce/Product	Scale of Production (In MT)
65	Atolimi	-Do-	---	Dried Wild Fruit	Selling To Group Members, Within The Village And Town	20 Packets
66	Suksho SHG	Philimi (Akuhaito)	6009068334	Jaggery	Selling To Group Members Villagers And Along The Highway	200 Kg
67	Atsunipulimi SHG	Aotsakili (Akuhaito)	9862020023	Fruit Wine(Plum, Peach, Banana Etc)	Selling To Group Members &Villagers And Along The Highway	100 Liters
68	Pekikithi SHG	Naghuto New (Akuhaito)	8974862611	Fruit Wine(Kiwi, Banana, Pineapple, Plum Etc)	Selling Within The Villagers And Exporting To Neighboring Villages	100 Liters
69	Jukucho Laghi SHG	Lumami (Akuluto)	9383150604	Pickles, Baked Products, Fruit And Vegetable Products Etc)	Packaged And Sold In Markets	0.1 Mt

THANK YOU

TRANSGRAPH
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