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FPOs : Growth Engine of Indian Agriculture

Guiding Business Plan for FPOs

Ten Steps Value Chain Approach

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(Designated Central Nodal Training Institute by GoI under CSS on Formation and Promotion of 10000 FPOs)

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Foreword

A critical aspect for success of any FPO is how realistic has been its business planning. Does it accounts for the various components viz. input, output, other potential business opportunities available etc.? Essentially, a robust Business Plan should be conceptualized in value chain framework.

Conceptual clarity is still required for comparative analysis of business economics of existing value chain actor/s in prevailing value chain/s and FPOs as a competitive value chain actors overcoming market barriers by adopting realistic and implementable business path lines. Further, vast potential of the business opportunities in cluster of the FPOs is still untapped.

In this backdrop, BIRD has initiated conceptualization of 10 steps value chain approach for formulation of business plan for identifications of cluster, identifications of multiple value chains, qualitative and quantitative value chain mapping, identification of economic activities, value chain analysis, techno-economic feasibility of identified economic activities, assessment of boundary conditions, prioritization of economic activities, formulation of alternative value chains and formulation of business plan comprising assessment of business potential, marketing plan, financial plan and risk mitigation plan.

This guiding business plan documenting 10 steps will help main as well as supporting value chain actors of FPOs ecosystem while deciding economic cluster size of FPOs, single versus multiple value chains model, techno-economic appraisal of FPO's proposal and harnessing agri-value chain financing by financial institutions.

This guiding business plan document will be useful for all the stakeholders involved in promotion and development of FPOs to make them competitive value chain actor.

I am thankful to Farm Sector Development Department (FSDD) of NABARD for sustained guidance, encouragement, and proactive support extended for refining the approach.

I extend my deep appreciation to Shri Prafulla R. Jha and Shri Rajesh Yadav, FMs, BIRD, Lucknow for their valuable contribution and to Joint Director, BIRD and Faculty Members for their steadfast support. I also want to convey my gratitude to the officials of POPI/FPO who contributed significantly to the development of this valuable and comprehensive document.

Nirupam Mehrotra
Director, BIRD, Lucknow
March, 2024

Chapter 1

Value Chain Approach for Preparation of Business Plan by FPO

Introduction

Farmers Producer Organization (FPO) is basically community-based business entity of primary producers which replaces one or combination of value chain actor/s for enhancement of economic rent of member producers. Therefore, the framework for developing business plan of FPO is built on the needs and issues faced by the members of the FPO and it guides the FPO how it will achieve its goal. The FPO necessarily requires the rigor and understanding of the Business sector as they have to compete with the market forces. The core business planning exercise for any FPO is to identify the gaps and problems faced by the farmers in the cluster area.

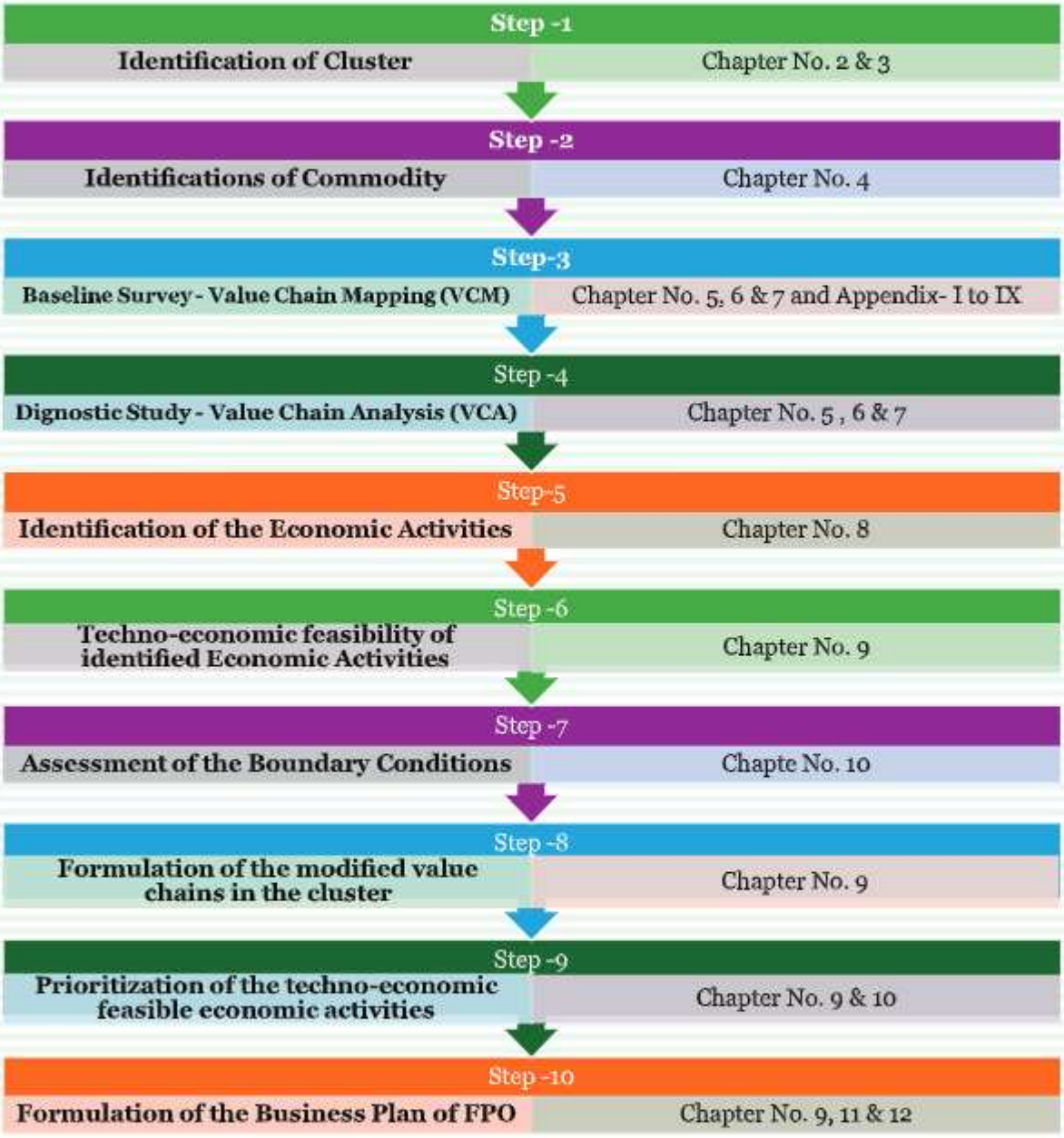
A business plan is a document that summarizes the operational and financial objectives of a business. For anyone starting a business, crafting a business plan is a vital first step. Therefore, comprehensive business planning is essential which sets out the business objectives and provides directions to achieve and sustain the profitability of the FPOs. The document which covers these aspects is "Business Plan".

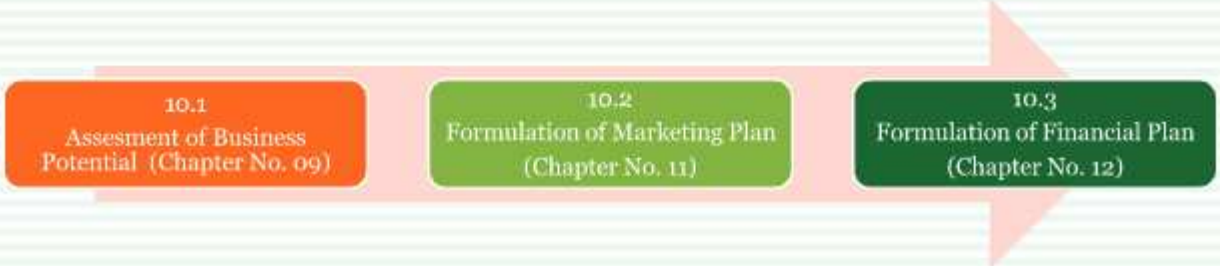
The preparation of a business plan for any FPO is a stepwise process where an outcome of one step leads to and facilitates the work on the next step. This also involves going back to the previous steps and correcting the assumptions or data selected to move to the next step.

In the subsequent chapters the methodology for preparation of a business plan by FPO has been described in a simple, clear and step by step manner. For the convenience of the readers and to emphasize the various nuances involved in the process of business planning, we have taken the example of XYZ FPO of Bareilly district of Uttar Pradesh. The business planning process was actually executed by us by collecting sample data through scheduled questionnaire from the farmers and other key value chain actors in the cluster area and nearby market. We have also applied Focussed Group Discussion (FGD) method for collection of information or data relating to various stakeholders such as FPO Members, Board of Directors, CEO, FPO promoting Agency, Financing banks, Line departments, Value chain players, Markets, Mandis etc. The business plan was prepared based on both macro and micro level data and both primary and secondary data was used while preparing the business plan. Secondary data was collected from various published / unpublished sources. Primary data was collected through structured / semi-structured questionnaires. Out of 862 share holders of the FPO, 203 members were surveyed in the process of business plan preparation.

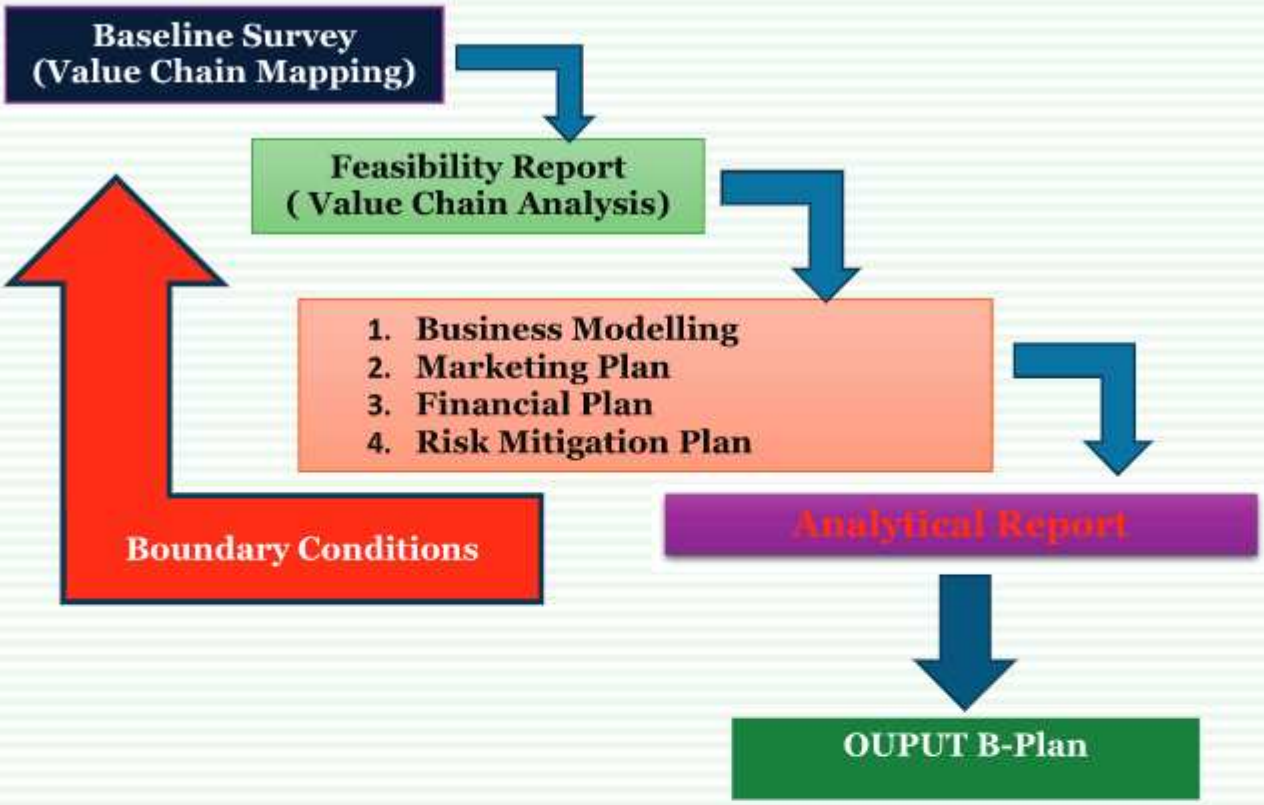
Ten steps Business Planning Process

Ten steps value chain approach based on value chain mapping methodology must be adopted while formulation of business plan of FPO as given below:





Flow Chart of the Business Planning process



Mechanism adopted while making modified value chains and formulating business plan of FPO

- Aggregation of Inputs
- Aggregate Marketing
- Value addition through primary / secondary / tertiary processing
- Trading with non-member
- Participation as an value chain actor/s
- Extending Logistic Services
- Centralize Economic Activity

Applied Economic Rent Enhancer

- Identifications of demand based business opportunities in cluster area
- Retaining *Input Margins*
- Reduction of *Production Cost* : Technology Transfer
- Capturing *Market Margin* by business participation
- Retaining *Processing Margin* : Value Additions
- Reduction of *Marketing Cost* through strengthening of Value Chains
- Convergence of multiple value chains

Stepping of business participation of FPOs considering degree of risk at each stage of the value chain

1. Aggregation of Inputs (Input Business)
2. Collective Marketing (Procurement and Marketing on MSP)
3. Value Addition (Primary, Secondary and Tertiary Processing)
4. Collective Marketing (Open Market Operation)
5. Trading (Buying and Selling of agri-produce of non-producer member)

Outcome of the business planning

Source : Conceptual framework of BIRD, Lucknow

Chapter 2

Know Your Cluster

Bareilly district is one of the agrarian district of Western Uttar Pradesh. Agriculture and allied agriculture sector are the back-bone of the agrarian economy. However, farmers are in distress on account of farming related problems i.e. *input management, technology transfer, formal credit support, marketing and risk mitigation measures*. Poor agricultural growth is resulting in poor agriculture income and increased farm related problems and challenges. In urban centric economic reform, the agricultural workers are compelled to migrate towards the cities in large number. Under this circumstances corrective measures are required to be undertaken. To mitigate the farming related problems and risk involved in agriculture, *Strengthening* and *Modernization* of agriculture tandem with animal husbandry sector with **new** *institutional development* is the need of hour.

The cluster of FPO is unevenly spread over 27 villages in four blocks of the district having distance from 6 to 15 Km from FPO office. Producers are growing diversified crops, namely wheat, paddy, millets, sugarcane, pulses (urad), oilseed (mustard), vegetables, marry gold, satavar along with rearing dairy animals in majority and having a few goatary units. However, principal crops in the cluster of FPO are *wheat, paddy, millets, sugarcane* and **diary** under allied agriculture sector.

Table 3.1 : Average land holding size of District, concerned blocks and Sample producers

Land Holding Pattern								
Land Holding Category	Less than 0.5 Ha		0.5 to 1.0 Ha		1 to 2 Ha		2 to 4 Ha	
Area / Average Land Holding : (ha)	Area	ALHS	Area	ALHS	Area	ALHS	Area	ALHS
District	77118	0.28	76102	0.69	89400	1.32	67088	2.67
All 4 Blocks	74883	0.27	74968	0.7	87692	1.32	65739	2.67
Sample Survey	**24.17**	**0.27**	**40.22**	**0.77**	**52.88**	**1.47**	**64.15**	**2.92**
Land Holding Category	4 to 10 Ha		10 or Above		All Category			
Area / Average Land Holding : (ha)	Area	ALHS	Area	ALHS	Area	ALHS	2 Landless producers	
District	27621	5.28	2997	15.94	340326	0.7		
All 4 Blocks	26955	5.28	2639	15.34	332876	0.7		
Sample Survey	**4.67**	**4.67**	**0**	**0**	**186.09**	**0.93**		

**ALHS : Average Land Holding Size*

Table 3.2 : Average land holding size of Sample producers

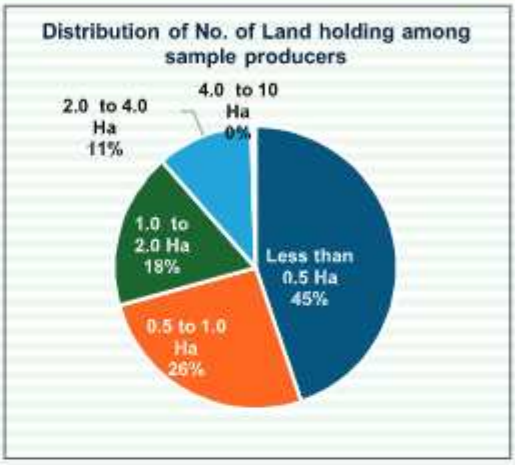
Land Category	Average Land Holding Size		
	NO	Area	ALHS
Less than 0.5 Ha	90	24.17	0.27
0.5 to 1.0 Ha	52	40.22	0.77
1.0 to 2.0 Ha	36	52.88	1.47
2.0 to 4.0 Ha	22	64.15	2.92

4.0 to 10 Ha	1	4.67	4.67
10 Ha and Above	0	0.00	NA
Landless	2	0.00	NA
Total	**203**	**186.09**	**0.93**

Average land holding size (ALHS) in the district and in concerned 4 blocks of FPO is 0.70 Ha comprising 93.69% and 93.72% small & marginal farmers, respectively. ***57% producers are having ALHS less than 0.50 ha***, 22.68% in between 0.50 to 1.0 Ha and 13.99% fall in between 1.0 to 2.0 Ha.

Likewise, average land holding size (ALHS) of 203 sample producer members is 0.93 Ha comprising 88.56% small & marginal farmers. ***44.78 % are having ALHS less than 0.50 ha***, 25.87% in between 0.50 to 1.0 Ha and 17.91% fall in between 1.0 to 2.0 Ha.

Details of land holding pattern in district, concerned blocks and sample producer members are given in Appendix I.



Cropping pattern

Out of 203 surveyed producer members, 190 producers are growing wheat, 173 are paddy growers, 37 sugarcane growers, 23 millet growers, 14 pulse (Urad) growers, 10 lady finger growers, 08 okra growers, 07 chilly growers, 06 marigold growers and 1 to 3 producers are bitter-guard, brinjal, cauliflower, groundnut and lobia grower.

Major cropping patterns in the FPO's cluster is as under :

27 Surveyed Producer : *Wheat + Paddy + Sugarcane*

22 Surveyed Producers : *Wheat + Paddy + Millets*

Production and post-harvest ecosystem

Input Management : Though some producers are purchasing inputs from FPO but limited potential of the inputs business is being harnessed so far due to lack of short and long term financial resources of FPOs. As per the infrastructure assessment given in Table 3.2, *Farm power availability is sufficient (6.25 Kw/Ha)* in sample producers to meet farm energy requirements. However, to overcome energy squeeze and reduce cost of irrigation, mobile solar irrigation system needs to be introduced in the FPO cluster. Diversification of farm implements and machines like seed drill, paddy trans-planter, sugarcane planter and sugarcane harvester is needed to reduce cost of cultivation.

Formal Credit Outreach : While value chain mapping of 203 producers have been undertaken, only two producers have reported availing KCC. Most of the producers reported nil KCC accounts.

Technology transfer : Producers of the Bareilly district have competitive advantage in terms of technological exposure because of access to nearby G. B. Pant University of Agriculture and Technology, Uddham Singh Nagar, Indian Veterinary Research Institute, Izzatnagar, Bareilly and Avian Research Institute, Bareilly. Extension directorate of Pantnagar University extending new and updated technology transfer support along with making availability of foundation and certified seeds through Tarai Beej Vikas Nigam. Annual Pantnagar Mela is one of the effective platform for adoption of technology transfer in required areas

of agronomy, plant protection, seed technology, mechanization, dairy technology need in FPO cluster. Pantnager Radio is also addressing various issues of producers.

Marketing : Most of the producers are selling their produce through village traders /primary traders and in nearest mandi. During the year 2022-23, 203 sample of producers sold total marketed surplus of Rs.314.51 lakh.

Table 3.1 Marketed surplus of 203 surveyed producers in FPO cluster

S. No	Crop	Marketed Surplus (quintal)	Actual Rate (Rs./q)	Actual Selling Value (Rs. in Lakh)
1	Sugarcane	12420.00	335.51	41.67
2	Floriculture	305.00	4131.15	12.60
3	Millets	419.50	2004.77	8.41
4	Paddy	4422.00	1898.69	83.96
5	Wheat	5858.00	2025.95	118.68
6	Oilseed	6.63	8597.29	0.57
7	Pulses	48.75	6256.41	3.05
8	Vegetables	1681.75	2087.11	35.10
	Total	**25161.63**		**304.04**

Table 3.1 and value chain analysis revealed that distress selling was found in respect of sugarcane, paddy and wheat when rates were compared with FRP price of sugarcane (Rs.350 /quintal), MSP of Paddy (Rs.2040 per quintal) and market price of wheat @ Rs.2153 per quintal. Producers sold their produces at Rs.335 per quintal, Rs.1898 per quintal and Rs. 2026 per quintal, respectively. Producers fetched good price of oilseed due to hike in market price. Team could not able to assess the level of distress selling in vegetable marketing due to volatile market and non-availability of price of mandi and retails shops.

Out of 203 surveyed producers, 134 producers are rearing 254 cow and buffaloes. 43% dairy producers are selling milk to local villagers itself, 33% selling to milkmen, 15% to local dairy units, 6% selling to local dairy and villager both and remaining 3% are selling combination of downstream value chain actors i.e. villagers, milkman and local dairy units. Average farm gate price of milk has been found Rs.40 per litre while average selling price of trader (milkman) is Rs. 58.33 per litre with average cost of value additions of Rs.3.75 per litres. It revealed that **price spread in trading of raw milk is Rs. 18.33 to Rs. 20 per litres**, which is very high.

Table 3.2 : Farm Infrastructure with sample producers member

S. No.	INFRASTRUCTURE	QUANTITY
I	Irrigation Infrastructure	
1	Canal	NIL
2	Tube-wells	160
3	Engine / Motor / Solar	NIL
4	Pump sets (Diesel/ electric/ Solar)	185
5	Pond	NIL
6	Sprinkler / drip irrigation System	NIL
7	Pump House	2
8	Other	37

II	Farm Mechanization	
1	Tractor	13
2	Power Tiller	6
3	Cultivator	10
4	Rotator	9
5	Harrow	14
6	Leveller	7
7	Plough (MB Plough / Disc Plough)	NIL
8	Seed drill	NIL
9	Seed Planter	NIL
10	Seed cum fertilizer drill	NIL
11	Trolley	11
12	Reaper cum binder	NIL
13	Straw (Bhusa) Making Machine	5
14	Thresher	8
15	Combine Harvester	2
16	Other	2
17	Total Farm Power (KW)	1186.14
18	Total Land Holding (Ha)	189.78
19	Mechanization Level (KW/Ha)	6.25
III	Storage Structure	
1	Kothila / Deshi Storage Structure	68
2	Godown	NIL
3	Clod Storage	NIL
4	Bulk Cooling Unit	NIL
5	Storage for fodder	NIL
IV	Processing Infrastructure	
1	Wheat Processing Unit	NIL
2	Oil Processing Unit	NIL
3	Sugarcane Processing Unit	NIL
4	Dal Processing Unit	NIL
5	Any Other Processing unit	NIL

Progressive farmers, who are presently undertaking animal husbandry can be brought under single umbrella of XYZ Farmer Producer Company, Bareilly. This FPC can provide professional platform to address the issues pertaining to 1) Input Management, 2) Technology Transfer, 3) Credit requirement, 4) Marketing and 5) Diversifications and Risk Mitigation measure. *Aggregation of inputs, Value additions* and *Aggregate marketing* would be the three pillar for strengthening agricultural and animal husbandry supply chains in the cluster of FPO.

A business plan of FPO has been formulated *applying value chain approach* and value chain mapping by conducting survey of 203 farmers residing in 27 villages fall in 4 blocks of Bareilly District. Value chain mapping of 2 commission agents, 5 traders / wholesalers, 7 milkman in prevailing value chains have also been undertaken along with focused group discussions with BODs and progressive members of FPO, DDM NABARD, Bareilly District. Availability of infrastructure support system, gaps, potential, issues, constraints barriers and suggestions of farmers, experts and resource persons of the area have also been assessed.

Chapter 3

Profile of XYZ Farmer Producer Company Limited

S.N.	Particulars	Details
1	Name of the FPO	XYZ Farmer Producer Company ltd.
2	Registration Act	Companies Act
3	Registration Number and date	2016
4	Registered Address	
5	Contact Address	
6	Promoted under	
7	Date of sanction by NABARD	2015
8	Name of the POPI	
9	Area of Operation • District • Blocks • Villages • Nearby Mandi	 • 01 • 04 • 27 • 02 (06 km & 15 Km from Office)
10	Major agriculture & allied activities undertaken in the cluster area	• Paddy • Wheat • Pearl millet • Sugarcane • Mustard • Pulse (Urad) • Dairy • Vegetables
11	Major Business activities	• Input business • Custom hiring • Trading business of cereals • Commission Agent of vegetables • Processing – Spices (Turmeric, Coriander and red chilli), Mustard oil • Seed processing (upcoming)
12	Licences obtained	• Fertilizer • Seed • Pesticide • APMC • FSSAI

13	Infrastructure available with FPO	• Office • Retail outlet- Rural Mart • Farm machinery Bank • Seed Processing Plant
14	Board of Directors • No. of Directors • Women Directors	 • 05 • 01
15	Name of the CEO	
16	Authorized Capital	Rs. 10.00 Lakh
17	Paid up capital • 2021-22 • 2020-21	 • Rs. 6,33,647.00 • Rs. 5,86,525.00
18	Number of Shareholders • Primary Producer • Institutional members ❖ SHGs ❖ JLGs ❖ Farmers Club	 • 862 ❖ 13 ❖ 05 ❖ 13
19	Total revenue • 2021-22 • 2020-21	 • Rs. 86.89 lakh • Rs. 62.27 lakh
20	Turn over • 2021-22 • 2020-21	 • Rs. 72.86.89 lakh • Rs. 62.27 lakh
21	Profit before Depreciation & preliminary expenses • 2021-22 • 2020-21	 • Rs.1.23 lakh • Rs.0.71 lakh
22	Net profit after Tax • 2021-22 • 2020-21	 • Rs.0.47 lakh • Rs.0.30 lakh
23	Basic earnings per share • 2021-22 • 2020-21	 • 0.94 • 0.60
24	Major Banks in the cluster area	SBI, PNB, BOB, RRB
25	Loans availed from Financial Institutions	• Sammunati – Rs. 5 Lakh • Sammunati – Rs. 25 lakh • NABKISAN – Rs. 20 lakh • RRB (BOB) - Rs. 25 lakh

Chapter 4

Identification of Major Commodities

In the identified cluster of FPO, wheat, paddy, pulses, vegetables, sugarcane and millets are the principal crops along with animal husbandry (Dairy farming). As per sample data of 203 surveyed producers, average area under crops, production, productivity and marketed surplus during last three years have been highlighted in Table 4.1.

Table 4.1 : Three years average of Area, Production, Productivity and Marketed Surplus of crops of sample producers

S. No	Crop	3 Years Average NSA (Ha)/GCA	%o age Crop Area Coverage	Three Year Average Production (quintal)	Marketed Surplus (quintal)
1	Sugarcane	16.95	3.85%	11220	12420
2	Floriculture*	5.27	1.20%	305	305
3	Millets	13.51	3.07%	456	419.5
4	Paddy	153.38	34.83%	5978	4422
5	Wheat	195.95	44.49%	7706.92	5858
6	Oilseed	1.65	0.37%	6.96	6.63
7	Pulses	34.62	7.86%	225.42	48.75
8	Vegetables	19.09	4.33%	1685.08	1681.75
	Total GCA	**440.42**	**100.00%**	**27583.38**	**25161.63**

**Satavar and marigold*

3 Years area, production and productivity given in Appendix II.

Sample producers are growing diversified crops under net sown area of 1126.73 acre with total average production of 29530.74 quintal of agri produces and able to sell 25670.63 quintal of average marketed surplus during the last three years. Details of the sale proceeds of the crops during the year 2021-22 is given in Table 4.2. Sale proceeds of the produces has been determined on the basis of lower and higher opportunity prices both received by the sample producers.

Table 4.2 : Marketed value of produces in the year 2021-22

S. No	Crop	Marketed Surplus	Lower Selling Rate (Rs./q)	Higher Selling Rate (Rs./q)	Lower Marketable Value (Rs. in Lakh)	Higher Marketable Value (Rs. in Lakh)	Average Marketable Value (Rs. in Lakh)
1	Sugarcane	12420.00	317	361	39.37	44.84	42.1
2	Floriculture	305.00	4050	4555	12.35	13.89	13.12
3	Millets	419.50	1996	2178	8.37	9.14	8.75
4	Paddy	4422.00	1861	2157	82.29	95.38	88.84
5	Wheat	5858.00	1940	2153	113.65	126.12	119.88
6	Oilseed	6.63	10433	12200	0.69	0.81	0.75
7	Pulses	48.75	6154	7204	3.00	3.51	3.26
8	Vegetables	1681.75	3589	5147	60.36	86.56	73.46
	Total	**25161.63**			**320.08**	**380.25**	**350.16**

Sale proceeds of marketed surplus of 25161.63 quintals ranges between Rs.320.08 lakh to Rs.380.25 lakh with average sale processed of Rs.350.16 Lakh for the year 2021-22. It is observed that trading business potential of FPO is Rs.380.25 crore for grain, horticulture and floriculture crops with surveyed producers only. This can be further enhanced by incorporating marketed surplus of remaining 659 producer members of FPO.

Status of the Dairy sector

Out of 203 surveyed producers, 134 producers (66%) are undertaking dairy economic activities. 27 producers are having cow and buffalos both and remaining 107 producers are either rearing buffalos or cows only. Out of 134 producers, 2 producers are also undertaking goatary economic activities along with dairy and only one producer is doing goatary only. 171 buffalos, 83 cows and 09 goats are reared by 135 producers.

Table 4.3 : Status of Dairy sector in 203 sample survey

S. No	Name of the animal	Unit	Total Buffalos	Total Cow	Total Animal
1	Number	Number	171	83	254
2	Quantity of Green Fodder	Kg/Day	1810	825	2635
3	Expenses on Greed Fodder	Rs./Day	4638.5	2137.5	6776
4	Quantity of Dry Fodder	Kg/Day	759	330	1089
5	Expenses on Dry Fodder	Rs./Day	7830	3300	11130
7	Quantity of Conventional Feed	Kg/Day	363	119	482
8	Expenditure on Conventional Feed	Rs./Day	6365	1995	8360
7	Quantity of Commercial Feed	Kg/Day	6	0	6
8	Expenses of Commercial Feed	Rs./Day	190	0	190
7	Expenditure on Health / Veterinary Services	Annual	236500	91000	327500
8	Total Production of Main Product	LPD	879	365	1244
9	Quantity Selling in Market	LPD	777	300	1077
10	Average Selling Rate by producers	Rs/L	40.46	39.91	40.22

Total milk production with 134 dairy producers is 1250 LPD and marketed surplus is 993 LPD. 23 dairy producer have no milk surplus for sale. Average farm gate price of milk in the cluster is Rs.40.22 per liter and they are selling to local villagers, local dairy plants, milkmen or in combination of villagers, milkmen and private dairy units.

Above tables revealed that there are better chances of dairy value chain integration within prevailing agriculture production system. Byproducts of paddy (bran and broken rice) and Oilseed (oil cake) along with raw millets will constitute 70 to 80% of the gradient of the animal feed. Hence, these commodities have also been included in value chain mapping of dairy value chains of the cluster area.

Being a major sources of feed ingredients for animal husbandry development, paddy, pearl millets and oilseed have been identified for value chain integration with dairy farming, whereas wheat and sugarcane and other crops have been taken for assessment of input business potential within identified cluster. Reduction of distress selling of sugarcane due to non availability of purchase order (parchi) from the sugar mills has also been taken into consideration for assessment of the business potential and opportunities for the FPO.

Chapter 5

Value Chain Mapping & Value Chain Analysis

5.1 Business Economics of existing input suppliers as Value Chain Actors

Value chain mapping of seven input suppliers were undertaken during the baseline survey. Quantitative and qualitative data, fixed and variable cost, segment-wise average purchase cost and average selling price have also been collected.

Table 5.1 : Fixed Cost of Input Supplier on Infrastructure and Support Service

S. No.	Sample Number	Amount (Rs.)	Annualised Fixed Cost (Rs.)
1	Cost of establishment of input shop*	364286	36429
2	Cost Storage Structure for inputs	17143	17143
3	Expenses on electricity	5829	5829
4	Expenses on manpower	94286	94286
5	Rent (If shop is on rent)	27429	27429
6	Travelling expense	42429	42429
7	Miscellaneous Expenses	6857	6857
	Total	**558259**	**230402**

**Economic life of input shop is taken 10 years for calculating depreciation.*

Under infrastructure and support service, average fixed cost of input suppliers is Rs5.58 lakh and annualized cost worked out to Rs.2.30 lakh. Input suppliers are doing business mainly in four segments i.e. Seed. Fertilizer, plant protection measures and nutrients only. None of the input supplier was involved in custom and hiring services.

Average purchase cost, average selling price and gross margins under three segments of the input business is presented in Table 5.1.

Table 5.2 : Business Economics of Input Supplier

Type of inputs	Unit	Average Cost of purchase	Average Sale Price	Gross Margins	Gross Margins (%)
Average of Fertiliser	Rs./Bag	1326	1368	42	3.07%
Average of Nutrients	Rs./Bag	296	364	69	18.96%
Average of Plant Protection	Rs./L	1360	1590	230	14.47%
Average of Seed	Rs/Kg	32	35	4	11.43%
Total		**3014**	**3357**	**345**	**10.28%**

Average gross margin per unit quantity of inputs is coming to Rs.345 (10.28%). To meet out the annualized cost of Rs.2.30 lakh, *minimum turnover of the inputs must be 668 units (Bag /Liters /Kg) in a year.*

5.2 Business Economics of producers and FPO as Input supplier Value Chain Actors

Table 5.3 : Variable and fixed cost of inputs under principal grain crops in identified cluster –(Rs./Acre)

S. No.	Name of Crop	WHEAT	PADDY	MILLET	SUGARCANE
A	FIXED COST OF CULTIVATION				
1	Land Revenue (Rs.) LAGAN	0	0	0	0
2	Rent Paid for Leased in Land (Rs.)	12000	12000	12000	24000
3	Deprecation on farm assets (Rs.)	NA	NA	NA	NA
4	Interest on working capital rate(%) KCC	0	0	0	0
	Total Fixed Cost	12000	12000	12000	24000
B	VARIABLE COST OF CULTIVATION				
1	Family Labour (Hrs.) / m-days	9	12	10	20
1	Family Labour (Rs.)	3041	4202	2908	6588
2	Attached Labour (Hrs.)	0	0	0	0
2	Attached Labour (Rs.)	0	0	0	1
3	Casual Labour (m-days)	12	9	7	167
3	Casual Labour (Rs.)	1823	2447	2199	5627
4	Hired Animal Labour (Hrs.)	0	0	0	0
4	Hired Animal Labour (Rs.)	0	0	0	0
5	Owned Animal Labour (Hrs.)	0	0	0	0
5	Owned Animal Labour (Rs.)	0	0	0	0
6	Hired Machine (Hrs.)	3	4	3	3
6	Hired Machine (Rs.)	3284	3973	3907	3986
7	Own Machine (Hrs.)	1	1	78	0
7	Own Machine (Rs.)	90	111	462	25
8	Hired Irrigation Machine (Hrs.)	19	27	15	48
8	Hired Irrigation Machine (Rs.)	2895	3921	1789	7713
9	Owned Irrigation Machine (Hrs.)	5	7	4	5
9	Owned Irrigation Machine (Rs.)	520	757	462	566
10	Canal and Other Irrigation Charges (Rs)	8	8	0	0
11	Seed Qty. (Kg.) / Plantlets (Number)	96	53	74	27
11	Seed Value (Rs.)	1875	1616	1103	8826
12	Fertiliser (N) (Kg.)	101	105	96	350
12	Fertiliser (N) (Rs.)	583	583	580	671
13	Fertiliser (P) (Kg.)	26	23	32	37
13	Fertiliser (P) (Rs.)	186	209	132	191
14	Fertiliser (K) (Kg.)	60	57	74	12
14	Fertiliser (K) (Rs.)	690	724	774	286
15	Other Fertiliser (Kg.)	37	45	35	68

15	Other Fertiliser (Rs.)	999	1005	836	887
16	DAP (Kg)	77	99	71	287
16	DAP (Rs)	1204	1725	1393	2106
17	NPK (Kg)	11	12	40	7
17	NPK (Rs.)	142	24	0	197
18	Manure (Qtl.) FYM	26	17	0	7
18	Manure (Rs.) FYM	1167	690	0	285
19	Insecticides (Rs.)	1146	1438	1415	1105
20	Crop Insurance (Rs.)	230	242	0	827
21	Miscellaneous Cost (Rs.)	672	813	469	1257
	Total Variable Cost	**20555**	**24488**	**18429**	**41144**
	Total Cost of Cultivation (Rs./acre)	**32555**	**36488**	**30429**	**65144**
	Total Cost of Cultivation (Rs./Ha)	**82690**	**92680**	**77290**	**165466**

Table 5.4 : Aggregateable Input Business Potential for FPO - (Rs./Acre)

S. No	AGGREGATABLE INPUT	WHEAT	PADDY	MILLET	SUGARCANE
1	Hired Machine	3284	3973	3907	3986
2	Hired Irrigation Machine	2895	3921	1789	7713
3	Seed Cost	1875	1616	1103	8826
4	Fertiliser (N)	583	583	580	671
5	Fertiliser (P)	186	209	132	191
6	Fertiliser (K)	690	724	774	286
7	Other Fertiliser	999	1005	836	887
8	DAP	1204	1725	1393	2106
9	NPK	142	24	0	197
10	Manure FYM	1167	690	0	285
11	Insecticides (Rs.)	1146	1438	1415	1105
	TOTAL	**14171**	**15908**	**11929**	**26253**
	Proportion of Variable Cost of Cultivation	66.94%	64.45%	64.73%	63.74%

Table 5.5 : Segmentation of Aggregatable Input Business Potential - (Rs./Acre)

Input Business Segment	WHEAT	PADDY	MILLET	SUGARCANE
Farm Mechanization –CHC	6179	7894	5696	11699
SEED	1875	1616	1103	8826
FERTILIZER	4971	4960	3715	4623
Plant Protection	1146	1438	1415	1105
Total	**14171**	**15908**	**11929**	**26253**

Table 5.6 : Gross Margins in Aggregatable Input Business Potential - (Rs./acre)

Segment – Margin	WHEAT	PADDY	MILLET	SUGARCANE
Farm Mechanization –CHC @8%	494	632	456	936
SEED @15.15%	284	245	167	1337
FERTILIZER @ 2.38%	118	118	88	110
Plant Protection @ 14,29%	164	205	202	158
Total	**1060**	**1200**	**913**	**2541**

Gross Margins in aggregatable input business varies to Rs.1060 per acre, Rs.1200 per acre, Rs.913 per acre and Rs.2514 per acre in wheat, paddy, millet and sugarcane crops, respectively.

Table 5.7 : Estimated fixed annual cost of FPO and provisions for discount, reserve and surplus and risk reserve

Particulars	Rs.
Office Rent @ Rs.5000/month	60000
Salary of CEO @ Rs.25000/Month	300000
Salary of Accountant @ Rs.10000/month	120000
Utility Charges @ Rs.2000/month	24000
Travel Cost @ Rs.2000/month	24000
Audit Charges @ Rs.20000/Year	20000
Other Expenses	
Repayment of Interest	
Miscellaneous Charges @ Rs.5000/month	60000
Total Fixed Cost Farm Machinery @Rs.1.0 Lakh/Year	100000
Annual Operating Expenses	**708000**
Additional Margins	
10% margin for providing cheaper inputs	70800
05% margin for reserve and surplus	35400
10% margin for Risk Mitigation in estimated business	70800
Any Other Items	
Total Annual operating Cost & Estimated Gross Margins	**885000**
Say	**900000**

To meet the annual fixed administrative cost of FPO and requisite provisions, minimum gross margins of Rs.9.0 Lakh needs to be earned from input business accrued from minimum net sown area (Break Even Point) in FPOs cluster.

Requisite size of Cluster and Number of shareholders for viability of FPO in Input business

Breakeven Point (Minimum Net Sown area under particular crop) =

(Estimated fixed annual cost of FPO and provisions for discount, reserve and surplus and risk reserve which is Rs.900000/-)

Gross Margins (Rs. per acre)

Applying BEP, minimum Net Sown Area (acre) have been determined and presented in Table 5.8.

Table 5.8 : Minimum NSA under various crops for viability of input business

Particulars	WHEAT	PADDY	MILLET	SUGARCANE
Annual Fixed Administrative Cost (Rs./Lakh)	900000	900000	900000	900000
BEP : Economic Cluster Size (acre)	849	750	986	354
BEP : Economic Cluster Size (Ha)	334	295	388	139

Particulars	Urad	Oilseed	Vegetable	Horticulture	Average
Annual Fixed Administrative Cost (Rs./Lakh)	900000	900000	900000	900000	900000
BEP : Economic Cluster Size (acre)	1961	2103	454	272	605
BEP : Economic Cluster Size (Ha)	772	828	179	107	238

After getting minimum net sown area of different crops, minimum turnover of input business have been calculated and presented in Table 5.9.

Table 5.9 : Minimum Turnover in Input Business of input business for viability of input business (Rs. Lakh)

Input Segment	WHEAT	PADDY	MILLET	SUGARCANE
Farm Mechanization -CHC	52.46	59.21	56.16	41.41
SEED	15.92	12.12	10.88	31.24
FERTILIZER	42.2	37.2	36.63	16.37
Plant Protection	9.73	10.79	13.95	3.91
Total	**120.31**	**119.32**	**117.62**	**92.93**

FPOs needs to undertake minimum input business of Rs.120.31 lakh for wheat crop, Rs.119.32 lakh for paddy crop, Rs.117.62 lakh for millet and Rs.92.93 lakh for sugarcane crop. FPO can also undertake input business of one or combination of crops as per the cropping pattern and available financial resources.

With similar approach minimum input business required to be undertaken by FPO for Urad, oilseed, vegetable and horticulture have also been calculated and illustrated in Table 5.10. However, for combination of crops the average minimum input business potential of all eight commodities of the cluster is Rs.103.06 Lakh.

Table 5.10 : Minimum Turnover in Input Business for viability (Rs. Lakh)

Input Segment	Urad	Oilseed	Vegetable	Horticulture	Average
Farm Mechanization -CHC	58.77	59.6	41	42.07	46.74
SEED	4.49	6.62	23.84	19.37	19.92
FERTILIZER	44.26	35.01	17.82	18.29	24.84
Plant Protection	17.88	16.57	11.86	15.94	11.56
Total	**125.4**	**117.8**	**94.52**	**95.67**	**103.06**

Details of aggregatable inputs of crops is given in **Appendix VI.**

Realistic Input Business Opportunities and Cost economics of FPO as an Input Supplier

Farm power availability in the cluster of FPOs is sufficient, hence there is limited or NIL business opportunities under FM-CHC segment of the input business potential. Further, interest on working capital is the cost to FPO, which must be included while assessment of minimum NSA required for FPOs for economic sustainability.

Therefore, available gross margin have been re-assessed for all 8 crops by deducting aggregatable business as well as gross margins of FM-CHC segment, which are as under :

Table 5.11 : Gross Margins in Aggregatable Input Business Potential without FM - (Rs./acre)

CROP	WHEAT	PADDY	MILLET	SUGARCANE	URAD
Segmentation of Aggregate-able Inputs / Gross Margin Amount (Rs./Acre)					
SEED	284	245	167	1337	35
FERTILIZER	118	118	88	110	54
Plant Protection	164	205	202	158	130
Total	**566**	**568**	**457**	**1605**	**219**
CROP	OILSEED	VEGETABLE	HORTICULTURE	AVERAGE	
SEED	48	796	1079	319	
FERTILIZER	40	93	160	111	
Plant Protection	113	373	838	193	
Total	**201**	**1262**	**2077**	**623**	

Table 5.12 : Minimum Input Business for viability (Rs. Lakh) and required Working Capital

S. No.	Particulars	Amount (Rs.)	Remark
1	Annual administrative fixed cost of FPO	608000	
2	Provision for cheaper Inputs @10% of cost	60800	
3	Provision for R. & S @5% of cost	30400	
4	Provision for Risk Mitigation @10% of cost	60800	
5	Interest on CC Limit @ 9.25%	290391	9.25% on Item (10)
6	**Total Cost of FPO for Input Business**	**1050391**	
7	Minimum Sown Area of Crop (ha)	664	Average of GCA all crops
8	**Minimum Input Business Required**	**15696814**	
9	Working Capital Required	3924204	
10	**Required CC Limit**	**3139363**	

The average gross margins under 3 input business components (seed, fertilizer and plant protection measures) is worked out to 6.69%. Minimum sown area of 664 ha and minimum input business quantum Rs.156.97 Lakh is required to achieve the viability of FPO as input supplier with total annual estimated fixed expenditure and interest on WC of Rs.10.50 Lakh. However, input business potential in 203 sample producers under GCA of 440.42 ha total estimated input business opportunities is worked out to Rs.90.88 Lakh. Since total membership of FPO is 862, hence additional area can be covered for tapping input business potential from the remaining members to achieve viability of input business plan.

5.3 Business Economics of Commission Agents as Value Chain Actors

Value chain mapping of two commission agents were undertaken during the baseline survey. Quantitative and qualitative data, fixed and variable cost, segment-wise average purchase cost and average selling price have also been collected.

Table 5.13 : Fixed Cost of Commission Agent on Infrastructure and Support Service (Rs.)

A	Infrastructure and Support Service	Commission Agent (1)	Commission Agent (2)	Average	Annual Fixed Cost
1	Cost of establishment, if Any	50000	0	25000	25000
2	Expenses on Electricity	0	0		
3	Expenses on Manpower	192000	240000	216000	216000
4	Rent (If Shop is on rent)	0	0		
5	Travelling Expense	36000	48000	42000	42000
6	Other Expenses	18000	12000	15000	15000
7	Interest Cost on capital Investment	0	0		
8	Purchase from farmer at village Level	Yes	Yes		
9	Purchase from farmer at Local Mandi	NA	NA		
10	Most prevalent purchase mechanism Village Level/ local Mandi/ APMC)	8	8		
11	Duration of purchase credit (days)	3-4	3-4	3-4	
12	Duration of Supply credit (days)	2-3	2-3	2-3	
13	Input / advance credit to producer	NIL	NIL	NIL	
				Total	**298000**

Table 5.14 : Business Economics of Commission Agent

B	Business parameters	Average Rate (Rs./Unit Quantity)
I	**Average Purchase Price**	
	WHEAT	2050
	PADDY	1850
II	**Cost of Value Addition**	
a	Transportation Cost	20
b	Loading and Unloading Charges	20
c	Primary Processing Cost	0
d	Drying Loss or any other loss	10.25
e	Mandi fees /Tax/ Commission	0
f	Packaging expenses	45
g	Any other Marketing Cost	2.50
	Total Cost of Value Addition	97.75
III	**Selling Price**	
	WHEAT	2187.50

	PADDY	2102.50
IV	**Gross Margins**	
	WHEAT	**39.75**
	PADDY	**154.75**
V	**BEP (Quintal of Commodity)**	**1532**

5.3 Business Economics of Trader/Wholesaler as Value Chain Actors

Table 5.15 : Fixed Cost of Commission Agent on Infrastructure and Support Service (Rs.)

A	Fixed cost on Infrastructure and Support Service	Total Cost	Annualised Cost
1	Cost of establishment,	260000	26000
2	Cost Storage Structure for Procurement	10000	10000
3	Monthly Expenses on Electricity	12000	12000
4	Monthly Expenses on Manpower	158400	158400
5	Monthly rent (If Shop is on rent)	0	24000
6	Monthly Travelling Expense	55200	55200
7	Purchase from farmer at village Level (Y/N)	Yes	Yes
8	Purchase from farmer at Local Mandi (Y/N)	NA	NA
9	Purchase from Commission Agent (Y/N)	NA	NA
10	Most prevalent purchase mechanism (option 7 / 8 / 9)	NA	NA
11	Annual Interest Cost on capital and or working capital	NA	NA
12	Duration of purchase on credit	4	0
13	Duration of Sale on credit	3	0
14	Input / advance credit to producer (% of the estimated sale)	NA	NA
	Total	**495600**	**285600**

Table 5.16 : Business Economics of Trader / Wholesaler

I	*Average Purchase Price*	*Average Rate (Rs. per quintal)*
	WHEAT	2025
	PADDY	2625
	RICE	2500
II	**Cost of Value Addition**	
a	Transportation Cost	20.00
b	Loading and Unloading Charges	20.00
c	Primary Processing Cost	0.00
d	Drying Loss or any other loss	0.02
e	Establishment Cost	0.00
f	Marketing Cost	0.02
g	Any other cost (Weighing charges & packaging expenses)	50.00
	Total variable Cost	**90.04**

III	**Selling Price**	
	WHEAT	2180
	PADDY	2900
	RICE	2750
IV	**Gross Margins**	
	WHEAT	64.96
	PADDY	184.96
	RICE	159.96
	Average Margins	**136.63**
V	**Breakeven Point (Quintal of Commodity)**	**2090**

Table 5.17 Business Economies of Millet Trader / Wholesaling

S. No.	Particulars	Amount (Rs.)	Remark (Variation)
I	**Infrastructure and Support service**		
1	Cost of establishment of shop	100000	20000-100000
2	Annual fixed Administrative cost to run the shop	2125000	Rs. 15 to Rs.30 Lakh
3	**Annualised Cost**	**2135000**	
II	**Variable Cost**	**Rs./q)**	
A	**Average purchase price**		
1	Millets (Grade A)	1855	1850-1880
2	Millets (Grade B)	1805	1800-1820
	Average	**1830**	
B	**Cost of Value Addition**	**Rs./q)**	
1	Transportation Cost	15	
2	Loading and unloading charges	10	
3	Drying loss or any other loss	30	
4	Storage Cost	7	
5	Any other cost (broker + insurance cost)	10	
	Total	**72**	
C	**Selling Price**	**Rs./q)**	
1	Millets (Grade A)	2107	2100-2140
2	Millets (Grade B)	2060	2050-2090
	Average	**2084**	
D	**Gross Margin (Rs./q)**	**182**	
E	**Breakeven Point (quintal of wholesaling)**	**11676**	

(Source : Internship Study Report of BIRD, Lucknow in adjoining Badaun District)

Trader's purchase price of pearl millet (bajra) varies from Rs.1850 to Rs.1880 per quintal for grade A and Rs.1800 to Rs.1820 per quintal for grade B millets with average purchase price of Rs.1855 per quintal and Rs.1805 per quintal, respectively.

Average cost of value addition at trader level was Rs.72 per quintal comprising transportation, loading and unloading charges, drying, storage, broker and insurance expenses, etc.

Trader's selling price of pearl millet (bajra) varies from Rs.2100 to Rs.2140 per quintal for grade A and Rs.2050 to Rs.2090 per quintal for grade B millets with average selling price of Rs.2107 per quintal and Rs.2060 per quintal, respectively.

Procurement business of Sugarcane : Inefficient and Ineffective sugarcane value chain

As per the procurement policy of the State Government, every year Sugarcane Societies on behalf of Sugarcane Department, Government of Uttar Pradesh conducts a survey during the month of May-June of its command area to record the total cane cultivated area. This survey, among other things, also helps us to understand the different varieties of sugarcane grown by farmers each year.

Post this, all sugarcane farmers within the command area of the mill are given a calendar which tells them when they can expect a Mill Supply Ticket (Purchy) against which they will supply their produce.

The calendar is distributed over 180 days. Based on the maturity and recovery expected from the varieties, the distribution is worked out in the calendar.

After receiving the purchy, the farmer harvests the cane and transports it to the mill gate. Farmers located in far flung locations supply their produce at mill's centers from where the sugar cane is then transported in trucks or through rail to the mill.

During the base line survey it is observed that smallholders are not getting *Mill Supply Ticket (Purchy)* on time while medium and large influencer sugarcane producers are able to manage and getting Mill Supply Ticket (Purchy) through malpractices in supply chains. Influencer producers are acting as village level commission agent in sugarcane value chain.

Because of ineffective and inefficient sugarcane supply chains farmers, particularly small and marginal farmers are bound to undertake distress selling. Out of 38 surveyed sugarcane producers, 25 producers (66%) had sold sugarcane at lesser rate than the FRP of the State Government. 11 sugarcane producers were able to get FRP and two sugarcane producers have fetched better price of sugarcane because of sugarcane of new verities was sold as seed to other producers for transplantation. The average distress selling price was Rs.282.80 per quintal against the FRP of Rs.350 per quintal. Value of distress selling was found to Rs.2,04,930/-, *which is 6% of total sale value of those producers, who have undertaken distress selling*. Details of the analysis is given in Table 5.18.

Table 5.18 Selling of Sugarcane in cluster area

No of Producers	Average Quantum Sold (q)	Selling Value (Rs.)	Average Opportunities Rate (Rs./q)	FRP (Rs./q)	Distress Price (Rs./q)	Distress Value (Rs.)	Remark
1	220	25500	116	350	234	51480	
1	460	138000	300	350	50	23000	
3	1500	475500	317	350	33	49500	
19	7330	2492200	340	350	10	73300	
1	850	289850	341	350	9	7650	

25	10360	3421050	282.8	350	67.2	204930	
11	2090	731500	350	350	0	0	
1	220	77440	352	350	-2	-440	*Sold as seed*
1	220	88000	400	350	-50	-11000	*Sold as seed*
2	440	165440	376	350	-26	-11440	
38	12890	4317990	336	350		193490	

An Oxfam study, "Human Cost of Sugar: A farm-to-mill assessment of sugar supply chain in Uttar Pradesh"

UP's 70-90% marginal farmers 'forced to sell' sugarcane at 40-50% lower prices

The captioned study was conducted in 58 villages across 5 districts of Uttar Pradesh – Meerut, Saharanpur, Bareilly, Lakhimpur Kheri and Muzaffarnagar – In the study it was found that sugarcane cultivation is the primary source of income for 67% of the marginal and 95% for the small farmers, but as high as 60% of the farmers, said that their basic quota of sugarcane supply is usually less than their actual produce by anywhere between 150-220 quintals.

Pointing out that because of faulty surveys resulting in decreased incomes by Rs48,000 to Rs 72,000, the Published study said, 70% -90% of the farmers are often forced to sell the cane to local jaggery producing units at lower price ***due to delays in receipt of supply tickets****, while 90% of the farmers face unfair weighing of cane at the mill gates or collection centres.*

(Source Link : https://www.counterview.net/2020/01/ups-70-90-marginal-farmers-forced-to.html)

The *Oxfam study validate the observation of baseline survey data of 38 farmers in FPO cluster in Bareilly District i.e* **66% sugarcane producer** are selling their produce at lower price than FRP **due to faulty sugarcane supply chains.**

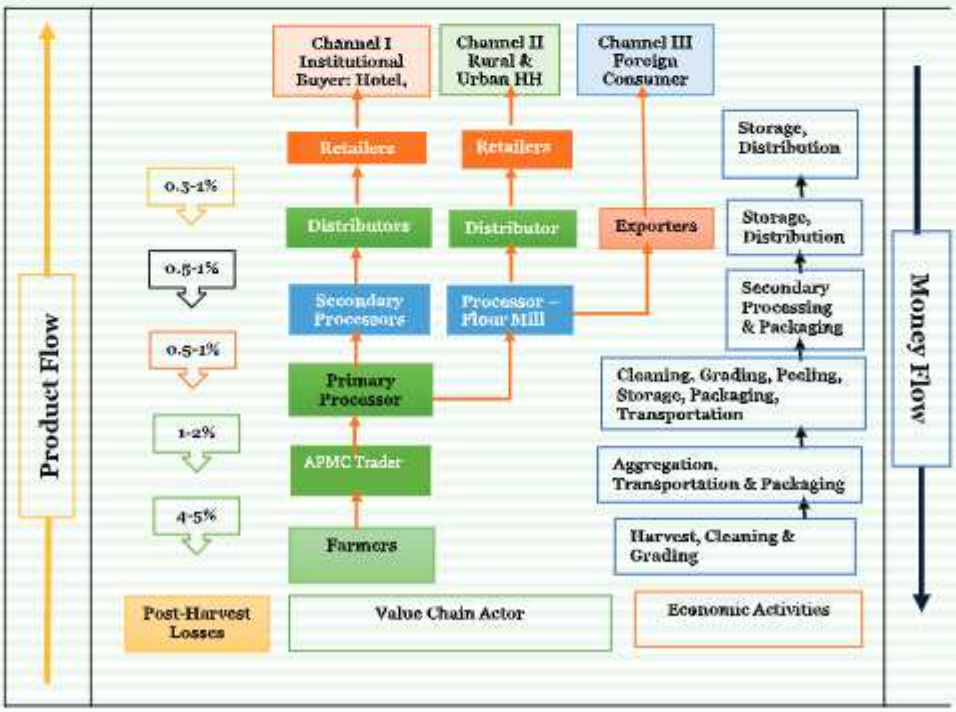


Figure 5.1 : Wheat alue Chains in Bareilly district of Uttar Pradesh

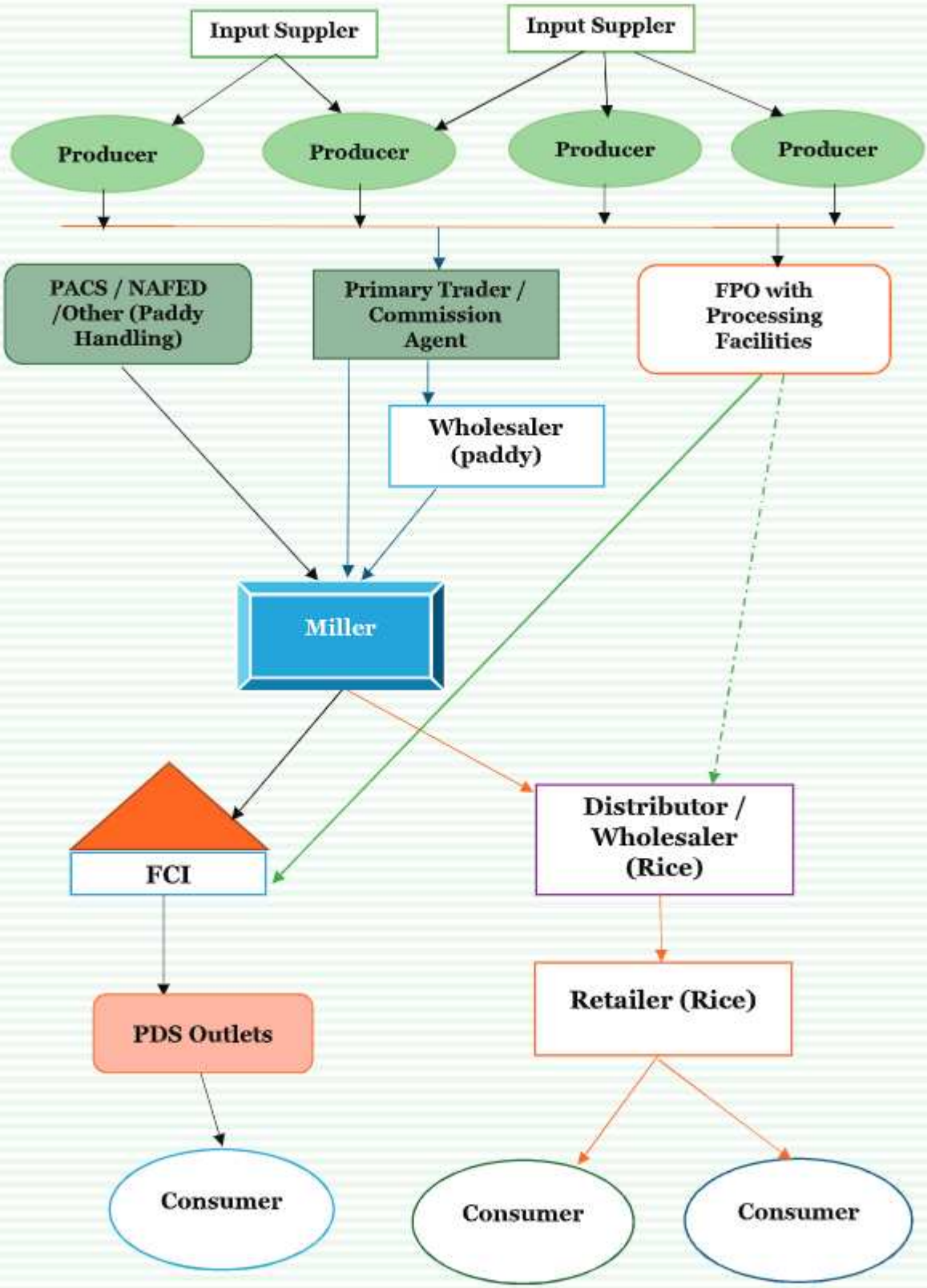


Figure 5.2 : Paddy Value Chains in Bareilly district of Uttar Pradesh

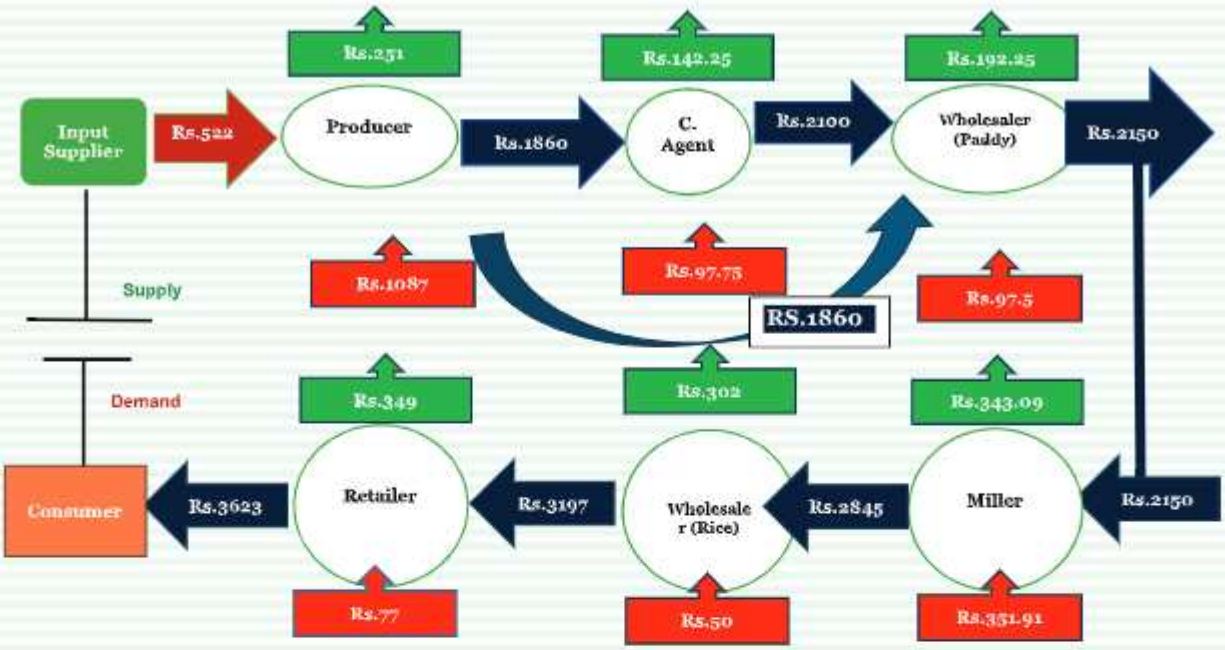


Figure 5.3 : Paddy Value Chains in prevailing area. (Open Route)

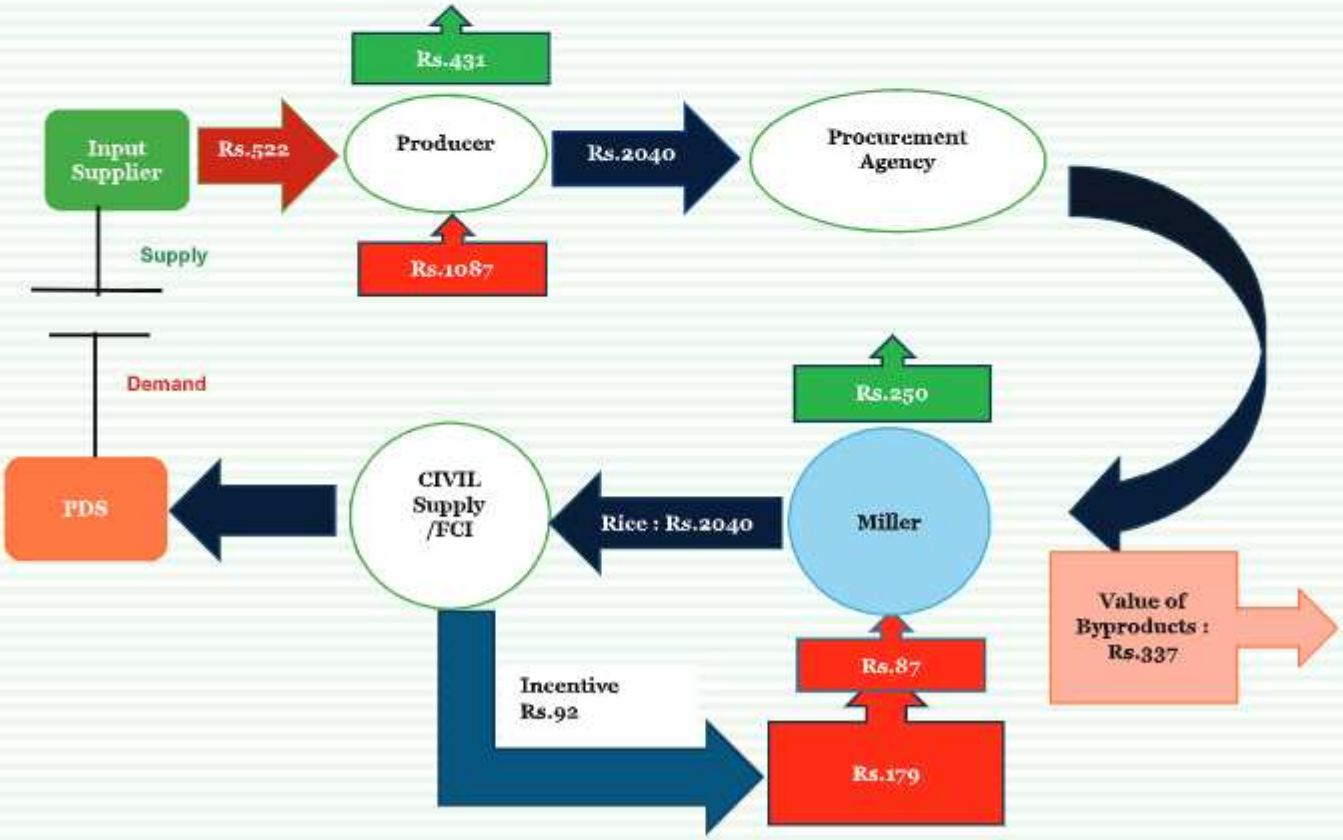


Figure 5.4 : Paddy Value Chains in prevailing. (MSP Route)

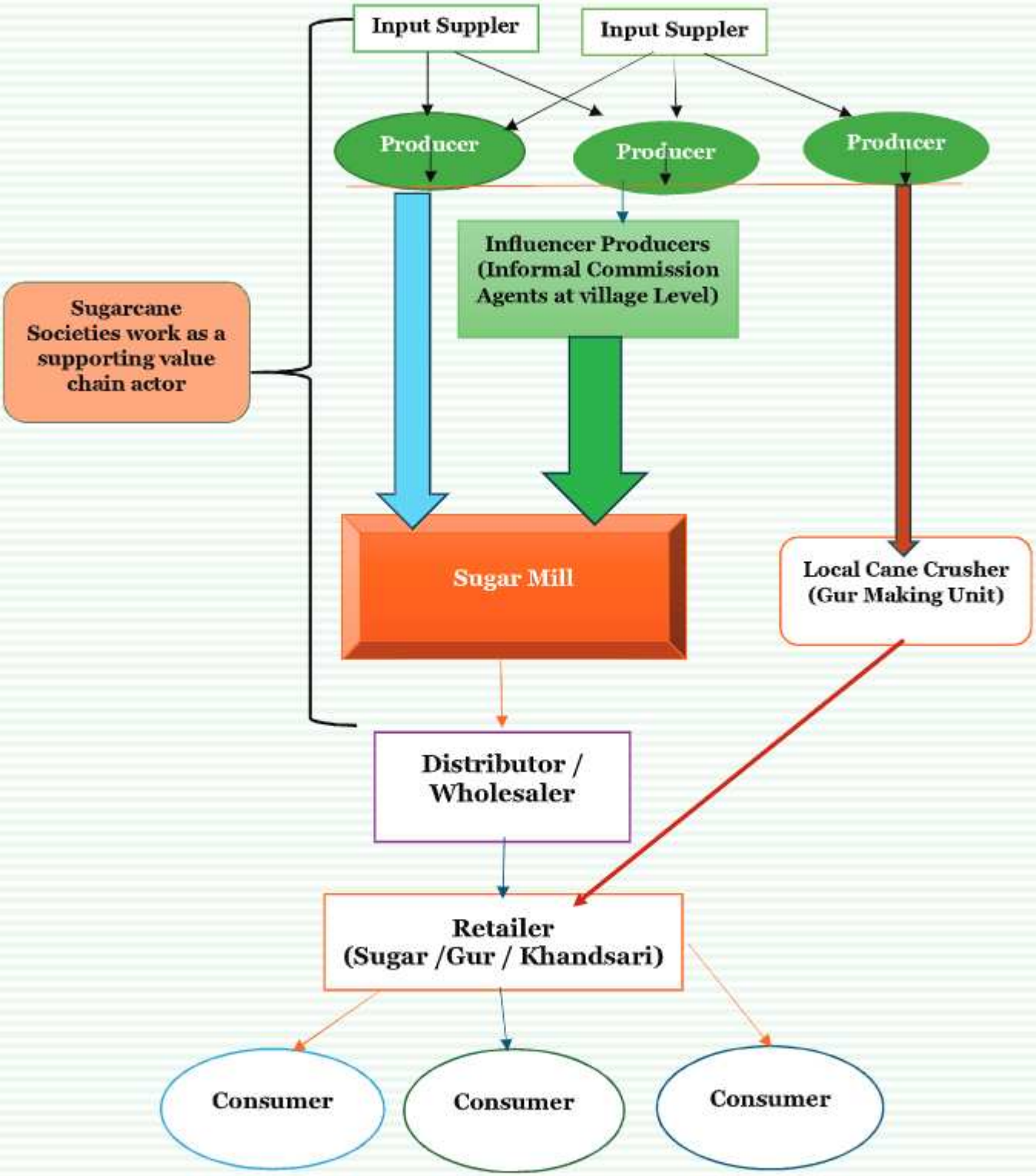


Figure 5.5 : Sugarcane Value Chains in Bareilly district of Uttar Pradesh

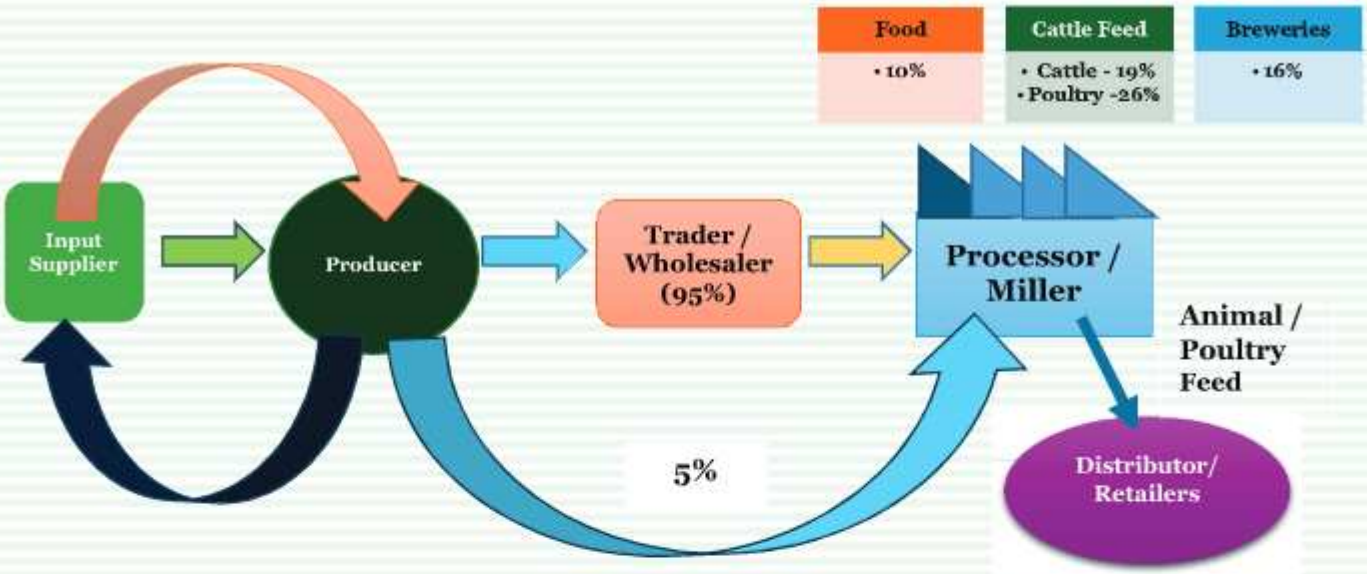


Figure 5.6 : Millet Value Chains in Bareilly district of U.P.

Chapter 6

Status of Allied Agri-Value Chains and Infrastructure Support & Services

6.1 Status of Live Stock in Bareilly District

Among all the allied activities, dairy farming has top position in Bareilly district. As per the livestock census 2007, 2012 and 2019, category wise live stock in Bareilly district is as under:

Table 6.1 : Status and growth of livestock in District Bareilly

S. No.	Live Stock	Census 2007		Census 2012		Census 2019		Growth (%)
		No.	Distribution (%)	No.	Distribution (%)	No.	Distribution (%)	
1	Cattle	260481	19.42%	261995	18.75%	234979	18.60%	-4.87%
2	Buffalo	578563	43.12%	637489	45.63%	707609	56.02%	10.59%
3	Sheep	1139	0.08%	3389	0.24%	3097	0.25%	94.46%
4	Horse	6957	0.52%	9622	0.69%	6758	0.53%	4.27%
5	Goat	172112	12.83%	198296	14.19%	130533	10.33%	-9.48%
6	Pig	18048	1.35%	14337	1.03%	4695	0.37%	-43.91%
7	Other	110	0.01%	615	0.04%	177	0.01%	193.94%
	Total Animal	**1037410**	**77.33%**	**1125743**	**80.57%**	**1087848**	**86.11%**	**2.57%**
8	Poultry	135416	10.09%	247804	17.74%	160779	12.73%	23.94%
9	Other Birds	168771	12.58%	23584	1.69%	14599	1.16%	-62.06%
Total Poultry		**304187**	**22.67%**	**271388**	**19.42%**	**175378**	**13.88%**	**23.08%**
Total Livestock		**1341597**	**100.00%**	**1397131**	**100.00%**	**1263226**	**100.00%**	

(Source : Animal Husbandry Census Report 2007, 2012 and 2019)

As per the above table it is observed that dairy farming contributes 62.54%, 64.38% and 74.62 % of the total live stock during the year 2007, 2012 and 2019 respectively with average negative growth of 4.87 % in cattle population but positive growth @ 10.59% of buffalo during the last 12 years. Second more important activity under animal husbandry sector is goat rearing.

6.2 Status of Live Stock in FPO's Cluster

As per the year 2019 animal census report, there were 41943 cattle, 126421 buffalos, 1045 sheep, 30,323 goat, 952 pigs and 20,322 poultry in FPO's cluster, which constitutes 17.85%, 17.87%, 33.74%, 23.23%, 20.38% and 12.64%, respectively of the total population of respective live stocks in Bareilly district. Details of the live stock in concerned Blocks of FPOs has been presented in Table No 6.2.

Table 6.2 : Live stock in concerned Blocks of FPOs

S. No.	FPO's Block	Cattle	Buffalos	Sheep	Goat	Pig	Poultry
1	Meerganj	11439	38113	311	11002	273	3432
2	Fatehganj	8274	25632	734	7560	218	3840
3	Bhojipura	6716	23661	0	7687	412	5870
4	Kyara	15514	39015	0	4074	49	7180
	Total	**41943**	**126421**	**1045**	**30323**	**952**	**20322**
	% of District	**17.85%**	**17.87%**	**33.74%**	**23.23%**	**20.28%**	**12.64%**

Table 6.3 : Livestock in concerned Blocks of FPOs and Concentrated feed requirements

S. No.	FPO's Block	Milch Cattle	Milch Buffaloes	Goat	Poultry	Total C. Feed Requirement
1	Meerganj	5433	18067	11002	3432	17734.58
2	Fatehganj	3946	12124	7560	3840	12151.58
3	Bhojipura	3211	11192	7687	5870	10971.22
4	Kyara	7447	18547	4074	7180	19278.87
	Total	**20037**	**59930**	**30323**	**20322**	**60136.24**
Concentrated Feed Requirement (MT per year)		**14627.01**	**43748.9**	**1455.504**	**304.83**	**60136.24**

6.3 Status and prospects of Dairy Farming in concerned blocks of FPO

Population of Milch Animal in concerned blocks of FPO is 20,037 cattle and 59,930 buffalos as per the Animal Husbandry Census Report 2019 and estimated annual milk production in concerned block of FPO is worked out to about 383.04 MT per day. Out of this production, 76.77 MT per day is being used for local consumption while 306.27 MT per day is marketable surplus. Most of the milk are being sold in local market. Details of estimated milk production and segmentation is given in Table 6.4.

Table 6.4 : Estimated Milk Production and Market Segmentation in Concerned Blocks of FPO

S. No.	Particulars	Unit	Quantity
1	Population of Milch Cattle	Number	**20037**
2	Population of Milch Buffalo	Number	**59930**
3	Population of Milch Animals	Number	79967
4	Total Production of Milk	MT/ Day	383.04
5	Own Consumption	MT/ Day	76.77
6	Marketable Surplus	MT/ Day	306.27
7	Number of Private Milk Processing Companies	Number	Unknown
8	Processing Capacity of Private Milk Processing Companies	LPD	NA
9	Number of Cooperative Milk Processing Institutions	Number	629
10	Processing Capacity of Cooperative Milk Processing Institutions	LPD	2000
11	Purchased by Cooperatives	%	0
12	Purchased by Local Dairy Units	15.32%	46.92

13	Purchased by Local Dairy Units & Villagers both	5.41%	16.57
14	Purchased by Local Dairy Units & Milkman both	1.80%	5.51
15	Purchased by Milkman and Villagers both	0.90%	2.76
16	Purchased by to Milkman	33.33%	102.08
17	Purchased by Local Villagers	43.24%	132.43
	Total	**100.00%**	**306.27**
18	Import of the milk in concerned blocks		Unknown

(Source : Animal population from Animal Census Report 2019, dairy value chain mapping of 134 dairy producers members of FPO)

6.4 Infrastructure Support Services available for dairy farming

Veterinary Doctors are available at Block and Nayaya Panchayat Level for necessary animal health support. Following infrastructure support system is available for animal husbandry sector at district as well as concerned blocks of FPO :

S. No.	Particular	No. in Bareilly	Meerganj	Fatehganj	Bhojipura	Kyara
1	Veterinary Hospital	37	3	2	3	1
2	Animal Husbandry Development centre	26	1	1	0	3
3	Artificial Insemination Centre	26	1	0	1	3
4	"D' Category Veterinary Hospital	5	0	0	0	0
5	Breeding Farm	0	0	0	0	0

(Source : District Statistical Patrika, Government of UP, 2022)

6.5 Status of the Milk Cooperative Societies in Bareilly

Bareilly Milk Producer Cooperative Society is the nodal agency for formation and nurturing of the milk societies. 629 Milk Societies has been formed with total membership of 25789 and selling value of the products is Rs.47.79 Lakh during the year 2021-22. Brief details of Milk Cooperative Societies is as under :

Pradeshik Cooperative Dairy Federation (PCDF) was formed in 1962 as State Government Undertaking with the aim to develop organized dairying in the State on Cooperative lines. PCDF's is a cohesive body established to remove the exploitative forces - the middlemen and to establish a direct link between the producer and the ultimate consumer. This Apex Milk Cooperative draws its inherent strength from the farmers committed participation, and injects corporate skills and dynamic professionalism into what is fundamentally a traditional institution. This organization has three Tier Structure consists of

1. ***Village level DAIRY COOPERATIVE SOCIETIES (DCS)** : The DCS in villages collect the surplus milk from farmer members . Animal Health and other support services are routed through the DCS to the farmers.*
2. ***District level Milk Unions**: The Milk Unions collect milk from all the village DCS of its district , process and market it. The Milk Union provides support and services to the farmer by routing them through the village DCS. Thus it sells cattle feed, organizes fodder development programmes and makes available good quality fodder seeds, provides artificial insemination facilities to improve breeds of milch animals, etc.*

3. ***State level Federation*** *: The Apex Federation provides Marketing services and other support to the District Milk Unions of the State. It also helps the Milk Unions to market milk outside the State ,maintains liaison with the Government, Plans and Coordinates Programmes and ensures mobilization of resources.*

Dairy Development Officer is a District Level Officer who facilitate for extending infrastructural and training support to the milk unions and village level milk societies.

6.6 Road Connectivity

All the cluster villages are connected with all weather road but the maintenance of the roads are very poor. Road density of the districot is 1700 Km per 1000 sqkm. Bareilly lies on the National Highway 30, which connects Sitarganj in Uttarakhand with Vijaywada in Andhra Pradesh. The 2040 km highway starts at the junction of NH 9 at Sitarganj, and passes through Bareilly, Lucknow, Allahabad, Jabalpur and Raipur to end at the junction of NH 65 in Ibrahimpatnam suburb of Vijaywada.[64] Other National Highways originating in the city include NH 530 (Bareilly–Rampur Highway),[64] NH 530B (Bareilly–Mathura Highway)[65] and NH 730B (Bareilly–Bisalpur Highway).[65] The UP State Highway 37 (Bareilly–Nainital Road) also originates in Bareilly;[66] so does the MDR29 W road, which connects Bareilly to Bilaspur via Shahi and Shishgarh.

6.7 Electricity

This is the biggest hurdle for industrialization in the district. The supply of power is erratic and there is also issue of low voltage for which alternative source of energy (Solar energy) have to be managed for smooth operations.

Chapter 7

Allied Agri Value Chain : Dairy Sector in FPO's Cluster

7.1 Land size distributions

Average land holding size (ALHS) of 203 sample producer members is 0.93 Ha comprising 88.56% small & marginal farmers. 44.78 % are having ALHS less than 0.50 ha, 25.87% between 0.50 to 1.0 Ha and 17.91% fall between 1.0 to 2.0 Ha.

7.2 Status of Livestock Sector in FPO's Cluster

Out of 203 surveyed producers' member of FPO, 134 producers (66%) are rearing 171 buffaloes and 83 cows totalling 234 dairy animals. Hence, per dairy producers are rearing 1.75 dairy animals. Out of 134 dairy producers, 27 producers are having buffaloes and cows both while remaining dairy producers have either buffaloes or cows.

Average productivity of buffaloes and cows are 5.18 LPD and 4.40 LPD, respectively with average productivity of dairy animals is 4.92 LPD.

Out of 134 dairy producers, 83% (111) are having marketable surplus and remaining 17% (27 dairy producers) used milk for their own consumption only.

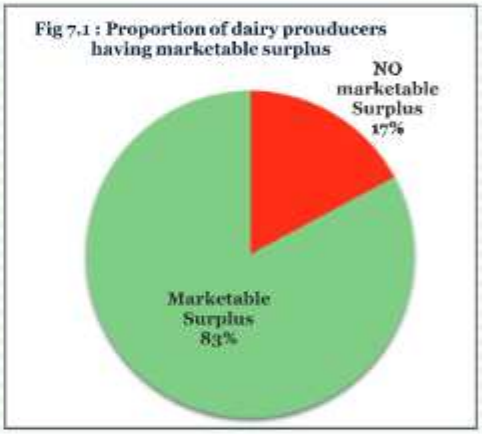


Table 7.1 : Status of Health Infrastructure and Services

S. No.	Particulars	Extension Services	Distance from the Village (Km)	Annual Expenses on animal Health (Rs. in Lakh)
1	Consultancy	Public / Private	Average 10-15 KM	3.25
2	Medicines	Public / Private	Average 10-15 KM	3.27
3	Nutrients	Public / Private	Average 10-15 KM	2.56
			Total	9.08

7.2 Potential Mapping of the dairy business in the FPO Cluster

Table 7.2 : Potential Mapping of Dairy sector in sample dairy producers in FPO's cluster

S. No.	Name of the animal	Unit	Total Buffaloes	Total Cow	Total Animal	Annual (Qty / Amount (Rs.)
1	Number	Number	171	83	254	254
2	Quantity of Green Fodder	Kg/Day	1810	825	2635	961775
3	Expenses on Greed Fodder	Rs./Day	4638.5	2137.5	6776	2473240
4	Quantity of Dry Fodder	Kg/Day	759	330	1089	397485

5	Expenses on Dry Fodder	Rs./Day	7830	3300	11130	4062450
7	Quantity of Conventional Feed	Kg/Day	363	119	482	86760
8	Expenditure on Conventional Feed	Rs./Day	6365	1995	8360	1504800
7	Quantity of Commercial Feed	Kg/Day	6	0	6	1080
8	Expenses of Commercial Feed	Rs./Day	190	0	190	34200
7	Expenditure on Health / Veterinary Services	Annual	233500	91000	324500	324500
8	Production of Milk	LPD	**885**	**365**	**1250**	**225000**
9	Marketed Surplus of Milk	LPD	**693**	**300**	**993**	**178740**
10	Average Selling Rate by producers	Rs/L	**40.46**	**39.91**	**40.22**	

Presently dairy producers are using 86760 Kg conventional feed during 180 days of lactation period with total expenses of **Rs.15.05 Lakh**. However, dairy producers are reluctant to use commercial feed, which is 25% costlier than conventional feed.

Out of 992 LPD marketed milk surplus, 298 LPD (30%) is being sold to local villagers for rural consumptions. *Hence, trading business potential of milk for FPO is limited to 695 LPD.*

Table 7.3 : Business opportunities in animal feed segment

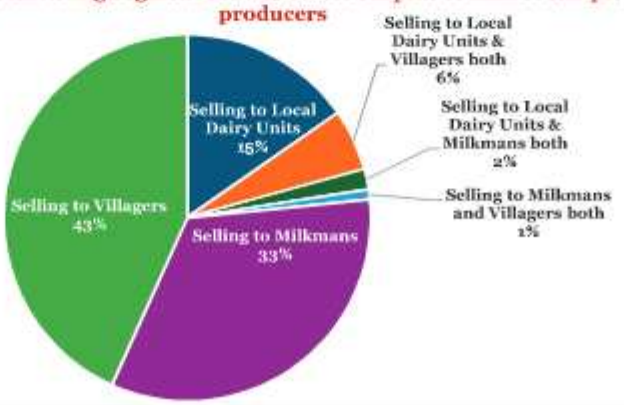
No of Animal	Type of Feed	Average Daily Quantum of Feed	Average Daily Cost of Feed	Annual Feed Requirement	Annual Feed Cost (Rs. In Lakh)
		Kg/Day	Amount in Rs.	MT	Amount in Rs.
254	Conventional Feed	381	9144	139.07	33.38
254	Commercial Feed	508	15240	185.42	55.63
	Total	**889**	**24384**	**324.49**	**89.01**

7.3 Marketing segment of produced Milk

Total milk production in sample dairy producers is 1250 LPD from 254 milch animals of which 993 LPD (79.44%) is the marketed surplus. Out of 111 dairy producers, marketing segment of surplus milk is as under :

- 48 dairy producers (43%) are selling milk at village level itself.
- 37 dairy producers (33%) are selling milk to milkman
- 17 dairy producers (15%) are selling to Local Dairy Units.

Fig 7.2 Marketing Segment of Marketable Surplus of milk of sample producers



- Remaining 6 dairy producers are selling milk to downstream value chain actors i.e, dairy units and at villages level both. One is selling to milkman and village level both. 2 are selling to dairy as well as to milkman. Segment of marketable surplus is illustrated in Fig 7.2.

7.4 Characteristics of Dairy Value Chains in cluster area

Generally, milk producers rearing local cows of deshi (indigenous) breed namely Sahiwal and Hariyana breeds. Among crossbred cows they are rearing Jershy and Frizian breeds and in buffalo only Murra breed was found by all milk producers.

During the FGD, it is also seen that there are dense pockets of villages, wherein concentrated animal husbandry economic activities is going on. In one village, concentrated dairy economic activity was undertaken by more than 500 dairy animals.

About average milk yield per day per animal it was 4 to 4.5 litres in local cows, 11.5 to 12.5 litres in crossbred cows and 8 to 8.5 litres in buffaloes on an average in cluster.

Regarding labour use it was found that for fodder management one male and one female family workers were engaged per day at the rate of 1.51 hours and 1.06 hours respectively for gross collection.

Some family workers were engaged for animal feeding at the rate 0.34 hour, shed management at the rate of 0.35 hour, washing animal at the rate of 0.26 hour, collection of dung at the rate of 1.08 hour, milking at the rate of 1.24 hour and for animal health at the rate of 0.39 hour.

Approximately 60% of the income was spent on cattle feeds and animals health and 40% on family expenditures.

Medicines and visits of veterinary doctors were costly affaires among the milk producers with fee @ Rs. 200 per visit by veterinary doctor which was very high.

Majority i.e. 98.33% of milk producers responded that cost of cattle feed and mineral mixtures was very high. Also 60% of milk producers told that EVS (Emergency Veterinary Services) were not available at all.

About output delivery, 100% of milk producers told that the payment of milk is done within 15 days with no incentive or bonus.

Chapter 8

Identified Business Opportunities : Economic Activities in FPO Cluster

Based on value chain mapping (sample survey of primary data and utilization of sector data from different platform) and value chain analysis following economic activities have been identified for FPO.

S. No.	Sector / Type of Economic Activity	Mechanism	Economic Rent Enhancer
	AGRICULTURE		
1	**Input Business** for wheat, paddy, sugarcane, Pearl Millets, Urad, Oil seed, Vegetable and Horticulture Crops.	Aggregation of Seeds, Fertilizers and Plant Protections and FM-CHC limited to diversified machines and implements only	a) Direct benefit to producer through cheaper inputs b) Indirect benefits on account of retentions of gross margins by FPO as Input Supplier Value Chain Actor
2	**Trading Business**		
	Wheat, Paddy and Pear Millets and Procurement of 66% of Sugarcane producers along with other crops	Aggregation and Collective Marketing on MSP / FRP	a) Direct benefit to producer due to differential price in market and MSP b) Indirect benefits on account of retentions of gross margins by FPO as Trader Value Chain Actor c) Procurement and selling of 66% sugarcane farmers doing distress selling @ Rs.282.82 per quintal against FRP of Rs.350/q.
3	**Processing Business**		
		Mechanism	**Economic Rent Enhancer**
(i)	Primary and Secondary Processing of Wheat	Creation of Collective infrastructure for agro processing units for wheat, Paddy and Oilseed and collective marketing of by-products and utilization of part by-products for tertiary processing	Indirect benefits on account of retentions of gross margins by FPO as Processor Value Chain Actor
(ii)	Primary and Secondary Processing of Paddy		
(ii)	Primary and Secondary Processing of Oil Seed		
4	**Animal Husbandry Sector**		
(i)	Tertiary processing of animal feed	Tertiary processing of primary processed pearl millets, secondary processed by-products of paddy and oilseed	Direct and indirect benefits on account of cheaper feeds / retentions of gross margins by FPO as Processor Value Chain Actor
(ii)	Common Consultancy	Collective Consultancy Services	Benefits to producer due to reduction of consultancy services
(iii)	Aggregation of Medicine	Aggregation	Indirect and direct benefits to producers due to cheaper medicines and retention of gross margins by FPO
(iv)	Aggregation Nutrients	Aggregation	
(v)	Group Insurance	Aggregation of services	Reduction of the cost and risk to producers by group insurance of producers

Chapter 9

Technical Fesibility & Economic Viability of Identified Economic Activities

9.1 Economic viability of Input Business Potential (IBP)

On the basis of the value chain mapping and value chain analysis presented in chapter 5, Minimum turnover of the input business has been assessed for crop grown in FPO's Cluster. Minimum Input Business potential has been summarised and given in Table 9.1.

Table 9.1 : Minimum Aggregate-able business quantum of input business

Minimum Turnover in Input Business	WHEAT	PADDY	MILLET
BEP : Economic Cluster Size (Ha)	334	295	388
Farm Mechanization -CHC	52.46	59.21	56.16
SEED	15.92	12.12	10.88
FERTILIZER	42.2	37.2	36.63
Plant Protection	9.73	10.79	13.95
Total	**120.31**	**119.32**	**117.62**
Minimum Turnover in Input Business	**SUGARCANE**	**URAD**	**OILSEED**
BEP : Economic Cluster Size (Ha)	139	772	828
Farm Mechanization -CHC	41.41	58.77	59.6
SEED	31.24	4.49	6.62
FERTILIZER	16.37	44.26	35.01
Plant Protection	3.91	17.88	16.57
Total	**92.93**	**125.4**	**117.8**
Minimum Turnover in Input Business	**VEGETABLE**	**HORTICULTURE**	**AVERAGE**
BEP : Economic Cluster Size (Ha)	179	107	**238**
Farm Mechanization -CHC	41	42.07	46.74
SEED	23.84	19.37	19.92
FERTILIZER	17.82	18.29	24.84
Plant Protection	11.86	15.94	11.56
Total	**94.52**	**95.67**	**103.06**

Technical feasibility and economic viability

As per the value chain analysis of variable cost of cultivation, available minimum gross margins under different segments of aggregatable inputs i.e.15.15% in seed, 2.38 % in fertilizers, 8% in FM-CHC and 14.29 % in plant protection measures, annual fixed cost of FPO (Rs.7.08 Lakh), provisions for cheaper inputs supply to producers (Rs.70,800/-), maintaining annual reserve and surplus of Rs.34,400/- and provision of risk on account of price fluctuation of Rs.70,800/-, minimum cultivable area under different crops varies from 107 ha under horticulture crops to maximum 828 Ha in oilseed crop on single commodity base. However, average minimum cluster size for multiple crop is worked out to 238 ha with Input Business potential of Rs.103.06 Lakh.

Hence, sufficient crop area is available in cluster to harness input business opportunities by FPO and is technically feasible and economical viable.

Minimum quantum of input business is coming to Rs.103.06 lakh, which is sufficient to meet the breakeven point of FPO as an input supplier value chain actor. Only constraints under input business is mobilising formal credit for establishment of FM-CHC for harnessing full potential of farm mechanization segment of input business. However, the cluster is sufficient in meeting mechanization requirement except diversification of machines and tools for specific purpose like paddy-trans-planter, sugarcane planter and sugarcane harvester etc,.

9.2 Economic Viability of Commission Agent

Average fixed cost and average annualized cost of infrastructure and support services of two sample Commission Agent (main value chain actors) is Rs.2.98 lakh. Business economics of Commission Agent is analysed in given Table 9.2.

Table 9.2 (a) : Cost of Infrastructure and Support Service of C.A.

S. No.	Particulars	Total Fixed Cost (Rs.)	Annual Fixed Cost (Rs.)
1	Cost of establishment, if Any	25000	25000
2	Monthly Expenses on Electricity	0	0
3	Monthly Expenses on Manpower	216000	216000
4	Monthly rent (If Shop is on rent)	0	0
5	Monthly Travelling Expense	42000	42000
6	Other Expenses	15000	15000
7	Annual Interest Cost on capital and or W. Capital	0	0
	Total	**298000**	**298000**
8	Purchase from farmer at village Level (Y/N)	Y	Y
9	Purchase from farmer at Local Mandi (Y/N)		
10	Most prevalent purchase mechanism (Village Level/ local Mandi/ APMC)		
11	Duration of purchase on credit	3-5 Days	3-5 Days
12	Duration of Sale on credit	2 Days	2 Days
13	Input / advance credit to producer (% of the estimated sale)	NIL	NIL

Table 9.2 (b) : Business Economics of Commission Agent

S. No.	Particulars	Amount (Rs./q)
I	**Average Purchase Price**	
	WHEAT	2050
	PADDY	1850
	Average	**1950**
II	**Cost of Value Addition**	20
	Transportation Cost	20
	Loading and Unloading Charges	0
	Primary Processing Cost	10.25

	Drying Loss or any other loss	0
	Mandi fees /Tax/ Commission	45
	Packaging expenses	2.5
	Any other Marketing Cost	
	Total	**97.75**
III	**Selling Price**	
	WHEAT	2187.5
	PADDY	2102.5
	Average	**2145**
IV	**Gross Margins**	97.25
V	**BREAKEVEN POINT (Minimum Quantity of sale)**	
	Breakeven Point for existing Commission Agent (q)	3064
	Breakeven Point for FPO (q)	9254

It is observed that BEP for business operation of Commission Agent is coming to 3064 quintals only against the BEP of 9254 quintals for FPO because of higher fixed cost. BEP of FPO is lower than the marketed surplus of 10,315 quintals of wheat and paddy sold by sample producers during the year 2021-22. Hence, CA's business is also found economically viable proposition for FPO with gross margins of Rs.97.5 per quintal for wheat and paddy selling.

9.3 Economic Viability of trading / wholesaling businesses

Average fixed cost of infrastructure and support services of five sample traders value chain actors is Rs.4.96 lakh and average annualized cost of the traders VCA is worked out to Rs.2.86 Lakh. Business economics of trader / wholesaler has already analysed in Table 5.13. Summary of business economics of trader/wholesaler is illustrated in Table 9.3.

Table 9.3 : Business Economics of trading / wholesaling business

S. No.	Particulars	Unit	Amount
1	Average Fixed Cost	Rs.	495600
2	Annualised Fixed Cost	Rs.	285600
3	Average Purchase Price	Rs./q	2383
4	Cost of Value Addition	Rs./q	90.04
5	Selling Price	Rs./q	2610
6	Gross Margins	Rs./q	136.96
7	Breakeven point existing trader / wholesaler	Quintal	2085
8	Annual Fixed Administrative Cost of FPO	Rs.	900000
9	Breakeven point FPO as a trader / wholesaler	Quintal	6571

It is observed that BEP of trading / wholesaling business is coming to 2085 quintal per year only against the marketed surplus of 10,315 quintals of wheat and paddy, which is much higher than the BEP even in 203 sample producers. As per Table 4.2, total marketed surplus of 203 sample producers was 25,670 quintal under eight principal crops during the year 2022-23, with the marketed value varies from Rs.297.03 lakh to Rs.353.12 lakh with average marketed value of **Rs.325.12 lakh**.

All Crops	Marketed Surplus (q)	Lower Selling Value (Rs. Lakh)	Higher Selling Value (Rs. Lakh)	Average Selling Value (Rs. Lakh)
Total	25670.63	297.03	353.21	325.12

Hence, as per the marketed surplus quantum of sample producers in the past years it is found that trading / wholesaling business is also economically viable.

9.4 Economic viability of processing businesses

There are six types of processing business opportunities available in the prevailing value chains as mentioned below :

I. Primary and secondary processing of wheat
II. Primary and secondary processing of paddy
III. Primary and secondary processing of Oilseed
IV. Tertiary processing of by-products of paddy and oilseed obtained from secondary processing and primary processed millets through establishment of animal / poultry feed manufacturing Unit
V. Primary and secondary processing of milk
VI. Primary, Secondary and Tertiary processing of Sugarcane

9.4.1 Techno-economic feasibility of wheat processing business

Segment of wheat in total sampled gross cropped area is 44.17 % in FPO's cluster with average productivity of 39.51 q/ha (15.55 q /acre). Total estimated production of wheat in sample survey of 498 acre is worked out to 7743 quintals and marketed surplus is 5886 quintal @76% of production.

Table 9.4 : Cost of Infrastructure and Support Service in wheat processing business unit

I	FIXED COST	Economic Life	Rs. in Lakh	Rs./q
1	Cost of Establishment	25	100	66.67
2	Cost of Storage Structure	25	10	6.67
3	Cost of Plant and Machineries for processing	15	40	44.44
4	Annual rent (If establishment is on rent)		0.25	4.17
5	Cost of Electrictity Infrastructure	15	8	8.89
6	Annual Insurance Cost		0.2	3.33
7	Annual Interest payment on Capital investment		5	83.33
8	Annual Fixed Operating Cost of FPO		7	116.67
	Total Fixed Cost		**170.45**	**334.17**
9	**Annualised Fixed Cost**		**20.05**	

Table 9.4 : Business Economics of wheat processing business unit

II	Average Purchase Cost od Raw Material	UNIT	Qty / Amt	Rs/q
A	Average Purchase price of wheat	Rs. / q	2450	2450
B	Minimum Purchase Rate of Wheat	Rs. / q	2000	
C	Maximum Purchase Rate of Wheat	Rs. / q	3200	

III	**Processing and Marketing Cost**			
1	Annual Expenses on Electricity	Rs. in Lakh	6	100
2	Annual Expenses on Manpower	Rs. in Lakh	4.95	82.5
3	Annual Travelling Expense	Rs. in Lakh	1	16.67
4	Annual Repair and Maintenance cost	Rs. in Lakh	0.5	8.33
5	Transportation Cost	Rs. / q	50	50
6	Loading and Unloading Charges	Rs. / q	0.5	0.5
7	Value of drying loss/weight loss or any other losses	Rs. / q	50	50
8	Weighing Cost	Rs. / q	10	10
9	Packaging Cost	Rs. / q	200	200
10	Branding Cost	Rs. / q	50	50
11	Marketing Cost	Rs. / q	100	100
12	Annual Interest Payment on Working Capital			11.53
	Total			**679.53**
IV	**Total of Variable Cost (Rs/q)**			**3129.53**
V	**Selling Price**			
	Atta (92 % of Raw Wheat)	Rs./q	3500	3220
	Chokar (8 % of Raw Wheat)	Rs./q	4500	360
	Maida (__ % of Raw Wheat)	Rs./q		
	Suzi (__ % of Raw Wheat)	Rs./q		
	Any other product (_% of Raw Wheat)	Rs./q		
	Total Value of By-products	Rs./q		**3580**
VI	**Gross Margin**	Rs./q		**450.47**
VII	**Break Even Point**	**Quintal**		**4451**

The breakeven point (BEP) of wheat processing unit is coming to 4451 quintals having 1 MT/hr capacity of processing, which is less than the marketed surplus available with sample producers. However, FPO has much more area under wheat in respect of 861 members compared to the sample survey of 203 producers (23.58%).

Further, procurement and processing of wheat through MSP rout or without MSP is economically viable.

9.4.2 Techno-economic feasibility of paddy processing business

Segment of paddy in total sampled gross cropped area is 36.47 % in FPO's cluster with average productivity of 38.97 q/ha (15.34q /acre). Total estimated production of paddy in sample survey of 390.60 acre is worked out to 5996 quintals and marketed surplus is 4430 quintal @73.90% of production.

Table 9.4 : Cost of Infrastructure and Support Service and Business Economics of paddy processing business unit

A	FIXED COST	Unit	Rs. in Lakh	Rs./q
1	Cost of Establishment	Rs. in Lakh	20	16
2	Cost of Storage Structure	Rs. in Lakh	10	8

3	Cost of Plant and Machineries for processing	Rs. in Lakh	45	36
4	Annual Insurance cost	Rs. in Lakh	0.25	5
5	Annual Miscellaneous admin cost	Rs. in Lakh	1	20
6	Annual Interest payment on Capital investment	Rs. in Lakh	5	100
7	Annual Fixed Operating Cost of FPO	Rs. in Lakh	7	140
	Total Fixed Cost	Rs. in Lakh	**88.25**	**325**
9	**Annualised Fixed Cost**	Rs. in Lakh	**17.45**	
B	**Cost of Value Addition**	**Rs./q**		**179.40**
C	**INCENTIVE**			
1	Commission	Rs./q		22.39
2	Loading and Unloading	Rs./q		4.96
3	Transport	Rs./q		16.5
4	Milling	Rs./q		10
5	Additional Incentive	Rs./q		20
6	Dryness	Rs./q		18.37
	Total Incentive given by the State Government			**92.22**
	Net Cost of Value Addition			**87.18**
D	**Selling Value of Finished Products**			
1	Rice (67%)	Rs./q	2040	2040
2	Rice Bran (7.5%)	Rs./q	26	195
3	Broken Rice (5.5%)	Rs./q	15	82.5
4	Husk (20%)	Rs./q	300	60
	Total Value of By-products	Rs./q		**2377.5**
	Gross Margin	Rs./q		**250.32**
	Break Even Point = Fixed Cost / Gross Margin	Quintal		**6971**

The breakeven point (BEP) of paddy processing unit is coming to 6971 quintals having 4 MT/hr capacity of processing (minimum capacity specified as per procurement policy of paddy on MSP), which is less than the marketable surplus available with sample producers. However, FPO has much more area under paddy in respect of 763 members compared to the sample survey of 203 producers.

Though, procurement and processing of paddy through MSP rout is economically viable for paddy processing due to assured market and better price **but technically not feasible** because producers are growing fine verities of paddy (Taj Varity), where rice conversion ratio is in the range of 55-60% against the stipulated norms under MSP is 67% resulting in lower opportunities price compared to the market rates.

During the focused group discussions (FGDs) with the producers held on 01 October 2023, it was emerged that despite more climate resilient and better milling yield, farmers had left growing coarse varieties of paddy due to ineffective and inefficient procurement of paddy on MSP on one side and less market demand in end market.

However, installation of lesser capacity of 1-2 MT / hour processing unit and or in combination of other processing units in a single shed for processing of fine varieties of paddy is found much more economically viable option for installation of paddy processing unit. This will pave way to retain reprocessing margins of secondary processed products for manufacturing of animal feed.

9.4.3 Techno-economic feasibility of Oilseed processing business

Table 9.5 : Cost of Infrastructure and Support Service and Business economics of mustard oil processing unit

A	FIXED COST	Unit	Qty	Rate	Amount (Rs.)	Annulised Cost (Rs.)
	LAND				Leased Land	
	WORKSHED	Sqf	3000		Leased Land	
	EQUIPMENT	Rs.			514480	77172
	TOTAL CAPITAL EXPENDITURE	**Rs.**			**514480**	
	WORKING CAPITAL	Rs.			400000	
	Intt on Term Loan					56593
	TOTAL PROJECT COST	Rs.			**914480**	**133765**
B	VARIABLE COST					
	PARTICULAR	Unit	Qty	Rate	Amount (Rs.)	Amt (Rs./q)
	RAW MATERIAL	Quintal	2250	6000	13500000	6000.00
	OTHER EXPANSE			384000	384000	170.67
	LABLE & PACKING MATERIAL		750	1000	750000	333.33
	SALARY	LS			120000	53.33
	Wages (Skilled / Unskilled)	LS			96000	42.67
	Overhead Expenses	LS			10000	4.44
	TOTAL				**14634000**	**6604.44**
C	Value of Finished Product	Unit	Qty	Rate	Amount (Rs.)	Amt (Rs./q)
	MUSTARD OIL	Quintal	750	16500	12375000	5500.00
	MUSTARD OIL CAKE	Quintal	1500	2300	3450000	1533.33
	TOTAL				**15825000**	**7033.33**
D	GROSS MARGIN				**1191000**	**428.89**
E	BREAKEVEN POINT	Quintal				**2673**
F	PROFIT	Rs.				**35645.00**

Technical feasibility and economic viability

Minimum required quantity of mustard to meet fixed cost infrastructure and support services is coming to 2673 quintal against the available marketable surplus of 7 quintals only with sample producers in FPO cluster. Coverage of acreage in sample farmers is limited to 0.37% of gross cropped area. Hence, oilseed processing is not found technically feasible in FPO cluster.

Since oilseed is essential raw material for animal, goatry and poultry feed manufacturing, hence, oilseed value chain is important for convergence with multiple value chains in the cluster of FPO. To harness the business opportunities of feed manufacturing required for dairy units, FPOs can explore the procurement of oilseed from other producers or procure from other FPOs or from open market. FPO will also be able to retain gross margin on account of tertiary processing of oil cake for feed manufacturing for

dairy sector as 5% oil cake ingredient is required for manufacturing of animal feed. Oil seed works as an economic rent enhancer by setting up mustard oil processing, resulting enhancement of economic rent @ Rs.428 per quintal to producers because of value addition.

9.4.4 Techno-economic feasibility of feed processing business

Table 9.6 : Daily requirement of conventional and commercial feed of sample producers in cluster of FPO

No of Animal	Type of Feed	Quantum of Feed (Kg/Day)		Price of Feed (Rs./Kg)		Cost of Feed (Rs./day)/Animal		Average Daily Quantum of Feed	Average Daily Cost of Feed
		Dry Period	Milking Period	Dry Period	Milking Period	Dry Period	Milking Period	Kg/Day	Amount in Rs.
254	Conventional Feed	254	508	24	24	24	48	381	9144
254	Commercial Feed	254	762	30	30	30	90	508	15240
	Total	**508**	**1270**			**54**	**138**	**889**	**24384**

- Average daily feed requirement of sample producers rearing 244 animals in cluster of FPO is estimated to 889 Kg with **total expense of Rs.24,384 per day. Total feed requirement for 244 animals is 324.49 MT in a year with total feed cost of Rs.89 Lakh** comprising conventional feed of Rs.33.38 Lakh and commercial feed of Rs.55.63 lakh.
- By establishment of feed manufacturing unit with capacity of one MT/hour and required utilization of 65% only, FPO would be able to supply the required quantum of feed in the cluster.
- Gross margins in feed manufacturing unit are generally ranging from 4% to 7% of the turnover. Data has also been validated with past record of feed manufacturing business segment undertaken by *Purvanchal Poultry Producer Company Limited, Deoria (UP).*
- Considering conservative gross margin @4% only under feed manufacturing business, FPO would be able to retain Rs.3.50 lakh in a year. Out of which, provision of 50% gross margin can be made for supplying cheaper feed to animal producers for market penetration and extending indirect benefits to producers.
- Further, major ingredients i.e. millets, rice bran, broken rice and mustard cake for manufacturing of animal feed are available within the prevailing agri-value chains of the cluster of FPO.
- Hence, manufacturing of animal feed integrated with millets-paddy-mustard value chains is technically feasible and economically viable economic activity for FPO.

9.5 Economic Viability of Milk procurement, primary and secondary processing by FPO

Table 9.7 : Fixed Cost on infrastructure and support services of Milkman

A	Infrastructure and Support Service	Fixed Cost	Annualised Fixed Cost of Milkman
1	Cost of establishment, (Vehicle for transportation)	50000	10000
2	Cane and Fastening	10000	2000

3	Annual Repair and Maintenance	12000	12000
4	Annual Insurance	2500	2500
5	Annual Interest Cost on capital @ 10%	3300	3300
6	Miscellaneous Expenses	38000	38000
7	Duration of purchase on credit	0	0
8	Duration of Sale on credit	0	0
9	Input / advance credit to producer (% of the estimated sale)	0	0
	Total	**115800**	**67800**

Table 9.8 : Business Economics of procurement and selling of Milk by existing milkman

S. No.	Particulars of Inputs	Unit	Amount (Rs.)
I	**Average Purchase Price**		
	MILK	Rs. Per Litre	40
II	**Cost of Value Addition**		
A	Transportation Cost	Rs. Per Litre	1.05
B	Loading and Unloading Charges	Rs. Per Litre	0
C	Primary Processing Cost	Rs. Per Litre	0
D	Drying Loss or any other loss	Rs. Per Litre	1.6
E	Mandi fees /Tax/ Commission	Rs. Per Litre	0
F	Packaging expenses	Rs. Per Litre	0
G	Any other Marketing Cost	Rs. Per Litre	0.79
H	Manpower		2.71
	Total Cost of Value Addition	Rs. Per Litre	**6.15**
III	**Selling Price**		
	MILK		**58.33**
IV	**Gross Margins**	**Rs. Per Litre**	**12.18**
V	**Annualised Fixed Cost of Milk trading**	**Rs.**	**67800**
V	**BEP**	**LPY**	**5567**
VI	**BEP (Litres of Milk / Day)**	**LPD**	**15.25**

On average Milkman are procuring and selling 90 to 120 litres per day and earning net income of Rs.158900 in a year.

Dairy producers are making expenditure of **Rs.3.28 Lakh** on animal health / veterinary services, which is coming to Rs.1290 per animal.

Total milk production with sample producers is found to 1250 liters per day from 254 animals. Out of this, dairy producers are able to sell 993 liters of milk per day. Estimated value of sale of milk is coming to Rs.104.25 lakh in a year.

Hence, sufficient business potential and opportunities of milk procurement and selling exist in FPO cluster. Hence, considering the business economics of milkman and exiting potential of marketed surplus of milk, aggregation and collective selling of milk by FPO is found technically feasible and economically viable propositions.

Table 9.9 : Business Economics of collective marketing and milk processing for paneer making

I	Fixed Cost	Unit	Qty	Amount	Annualised Fixed Cost
1	Establishment on rent			120000	120000
2	2 Bulk Chilling Unit	No	1	365000	24333
3	Milk Collection Centres	No	10	990000	141429
4	Referee Van cum Milk ATM	No	1	850000	121429
5	10 CCTV Camera (MCC)	No	10	100000	33333
6	Khoya Machine	No	1	65000	13000
7	Office Furniture	No	1	80000	16000
8	Computer	No	1	50000	16667
9	Electricity			12000	12000
10	Salary			360000	360000
11	Any Other				
	Total Fixed Cost			**2992000**	**858191**
		Unit	**Qty**	**Rate**	**Amount**
II	**Average Purchase Price**	Litre	5	58.33	291.65
III	**Cost of Value Addition**				
1	Panner Processing	Kg	1	15	15.00
2	Packaging Cost	Kg	1		
3	Transport Cost	Kg	1		1.00
4	Other Marketing Cost	Kg	1		
	Average total Cost of Value Addition				**16.00**
IV	**Selling Value**				
1	Opportunity price of Raw Milk	Litre			
2	Opportunity price of Paneer (Regular Customer)	Kg	1	300	300.0 0
3	Opportunity price of Paneer (Irregular Customer)	Kg	1	320	320.00
4	Opportunity price Paneer Event based demand	Kg	1	350	350.00
5	**Average Selling Price of paneer**				323.33
6	**Average Selling Value of Milk &Paneer**	**L/ Kg**	**1**		**323.33**
V	**Gross Margins**				**15.68**
VI	**BREAKEVEN POINT**				
1	Breakeven Point (Kg of Paneer)				**54732**
2	Breakeven Point (Kg of Milk)				**273660**
3	Average Daily Paneer Production				**150**
4	Average Daily Milk Procurement				**750**

9.6 Business economics of milk processing unit of FPO

Local Milkmen are selling primary processed milk at rate of Rs.58.33 litres.

Total cost of investment for collective procurement of milk is coming to Rs.29.92 lakh and annualised cost of infrastructure support and services is estimated to Rs.8.58 lakh. Annual fixed administrative cost of Rs. 8.58 Lakh is required to compensate with available average gross margins in milk of procurement of Rs.14.58 per day.

Average cost of value addition for procurement, transportation and making paneers is coming Rs.16/Kg of paneer.

Secondary processed milk i.e. paneer can be sold to three types of customers i.e. regular customer, irregular customer and time demand customer as and when required at rate of Rs.300/Kg, Rs.350/Kg and Rs.380/Kg, respectively with average selling price of paneer at the rate of Rs.323.33/Kg (*equivalent to milk price of Rs.64.67/litre*).

Breakeven point (BEP) of paneer making unit is coming to **54,732 Kg** of paneer, which requires **2.74 lakh litters** of milk against which availability of marketable surplus with 134 sample dairy producers is **1,78,740 litres only**, which can be further increased by mobilising remaining 669 producer members for milk procurement.

Paneer making will further enhance value milk of from average selling value of raw milk of Rs.58.33 per litres to Rs.64.67 per litres (10% of value of raw milk).

Techno-economic feasibility of milk procurement and processing business for FPO

Quantum of milk (750 LPD) required to meet fixed cost of processing infrastructure and support services is more than the marketable surplus (992 LPD) with sample dairy producers in FPO cluster. However, if all the milk producers in the cluster of FPO is considered, there are good potential of marketable surplus to scale up the business of milk processing. Hence, secondary milk processing business is technically feasible and economically viable proposition for the FPO.

9.7 Business economics of seed processing of wheat

S. No.	Particulars	Amount (Rs. Lakh)	Annualised Cost (Rs. Lakh)
A	FIXED COST		
1	Establishment Cost of Seed Processing Unit	60.00	9.00
2	Housing (Rent)	0.24	0.24
3	Insurance	0.15	0.15
4	Intt on capital Investment (subsidized)	0.00	0.00
5	FPO Annual Fixed Admin Cost	9.00	9.00
	Total	**69.39**	**18.39**
B	VARIABLE COST		
1	Projected MSP (2024-25)	Rs./q	2242
2	Incentive to Seed Producers	Rs./q	100
I	**Total Purchase Cost**	**Rs./q**	**2342**
3	Seeds Certification, Demo, Licence	Rs./q	15
4	Transportation	Rs./q	20

5	Processing and Packgeing	Rs./q	250
6	Dem Freight Charges	Rs./q	7
7	Labour	Rs./q	5
8	Loading Charges	Rs./q	20
9	Purchases of Bags	Rs./q	30
10	Testing Charges	Rs./q	1
11	Weight Machine Charges	Rs./q	2
II	**Total Cost of Value Addition**	**Rs./q**	**350**
III	**Selling Price of Seed**	**Rs./q**	**3350**
	Marketing Cost (i/c Transportation)	**Rs./q**	**45**
IV	**Gross Margin**	**Rs./q**	**613**
C	**BEP (Seed Quantity) quintal**		**3000**
	Say (Quintal of seed processing)		
D	Acreage of Wheat with 203 sample producer member	Ha	196
E	Projected Acreage of Wheat with 862 producer member	Ha	832
F	Total Seed Required (quintal)	Quintal	998

Techno-economic feasibility of seed processing of wheat

The breakeven point (BEP) of wheat processing plant is coming to 3000 quintals of wheat seed. However, FPO has projected acreage of all 862 producer members under wheat crop is coming to 832 ha, which requires 998 quintal of seed only despite the fact of considering 100% replacement of seed. *Hence, seed processing business with present size of cluster is not found techno-economically viable proposition for FPO.*

9.8 Business Potential in Cluster of FPO for 203 sample producer members

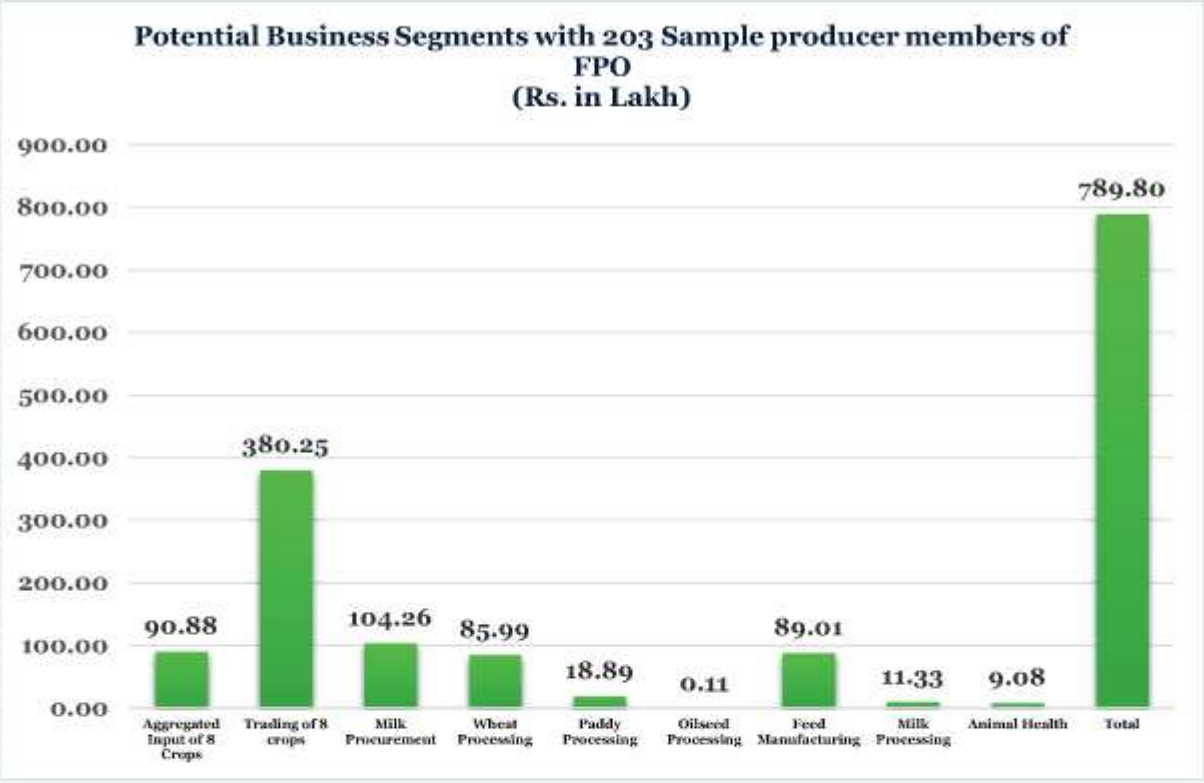
On the basis of value chain analysis of 203 producer members of FPO, potential mapping, technical feasibility and economically viability of identified economic activities following quantum of business have been estimated within the boundary conditions and barriers of the cluster, which are as under :

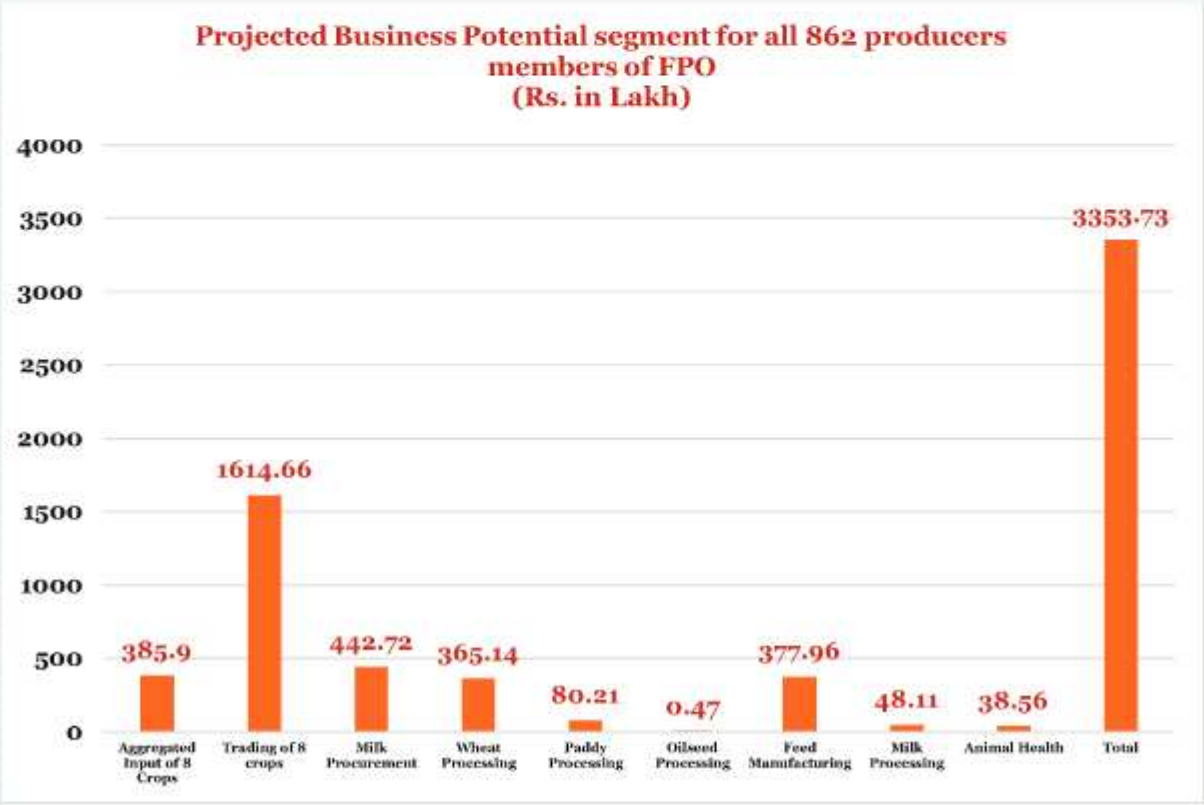
S. No.	Business Segment				
I	INPUT BUSINESS	NSA (ha)	Gross Aggregate-able Input (Rs.per Acre)	Aggregate-able Mechanization CH Component	Net Amount (Rs. In Lakh)
1	WHEAT	195.95	14171	6179	39.78
2	PADDY	153.38	15908	7894	31.22
3	MILLET	13.51	11929	5696	2.14
4	SUGARCANE	16.95	26253	11699	6.27
5	URAD	34.62	6395	2997	2.99
6	OILSEED	1.65	5602	2834	0.12
7	VEGETABLE	19.09	20819	9031	5.72
8	HORTICULTURE	5.27	35174	15468	2.64
	Total GCA	**440.42**			**90.88**

II	TRADING BUSINESS	Marketed Surplus (q) / Litres	Av Farm Gate Price (Rs/q)		Amount (Rs. In Lakh)
1	Sugarcane	12420	361		44.84
2	Floriculture	305	4555		13.89
3	Millets	419.5	2178		9.14
4	Paddy	4422	2157		95.38
5	Wheat	5858	2153		126.12
6	Oilseed	6.63	12200		0.81
7	Pulses	48.75	7204		3.51
8	Vegetables	1681.75	5147		86.56
	Sub-Total	**25161.63**			**380.25**
9	Raw Milk Trading	178740	5833		104.26
	Total Trading Business				**484.51**
III	**PROCEESING BUSINESS**	**Marketed Surplus (q)**	**Value Added Value (Rs./q)**		**Amount (Rs. In Lakh)**
1	Wheat (over and above trading business)	5886	1461		85.99
2	Paddy (over and above trading business)	4429	426.5		18.89
3	Oil Seed (over and above trading business)	6.63	1733.33		0.11
4	Manufacturing Animal Feed	MT			
4a	Conventional Feed for 254 sample animals	139.07	2400		33.38
4b	Commercial Feed for 254 sample animals	185.42	3000		55.63
5	Processing Business of Milk over and above trading of milk (making 35748 Kg Paneer)	178740	634		11.33
	Total Processing Business				**205.33**
IV	**Animal Health Business**				**Amount (Rs. In Lakh)**
1	Consultancy				3.25
2	Medicines				3.27
3	Nutrients				2.56
	Total Animal Health Business				**9.08**
	GRAND TOTAL BUSINESS POTENTIAL (203 producers-Members				**789.80**

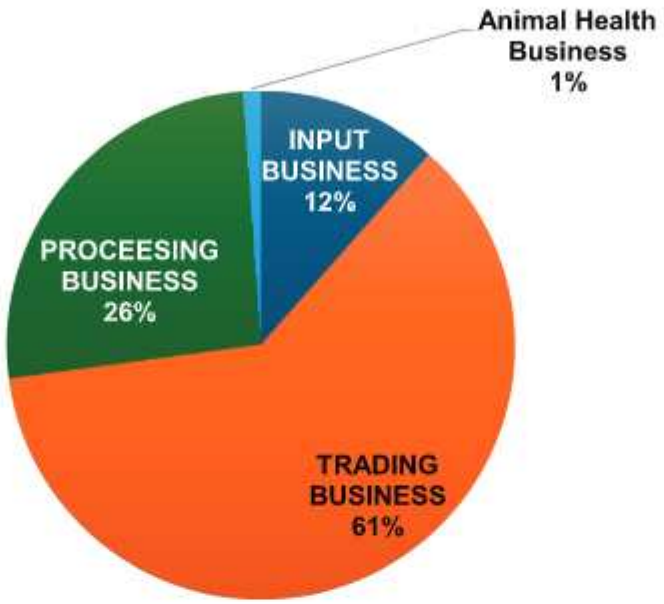
Note : Input and Output business potential of goat value chains was not considered while assessment of the business potential of FPOs as only three producers are rearing goat.

9.9 Segmentations of different types of business

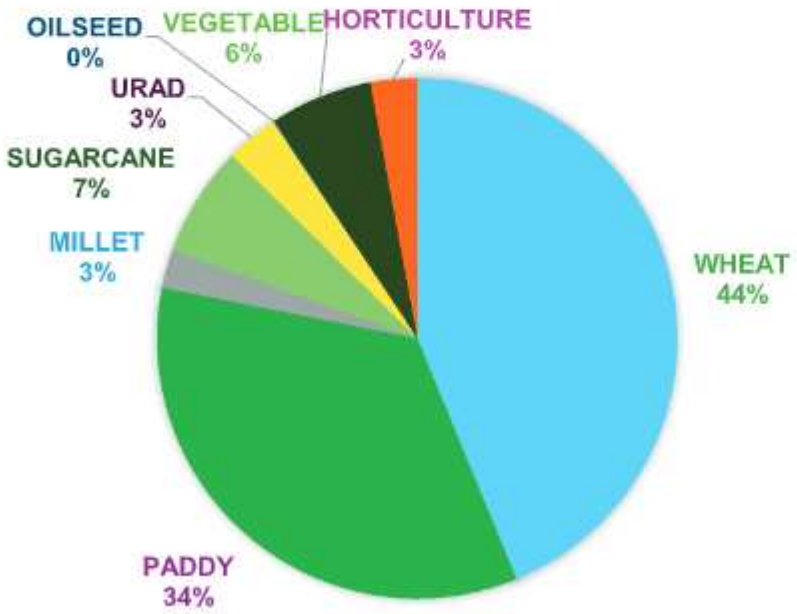




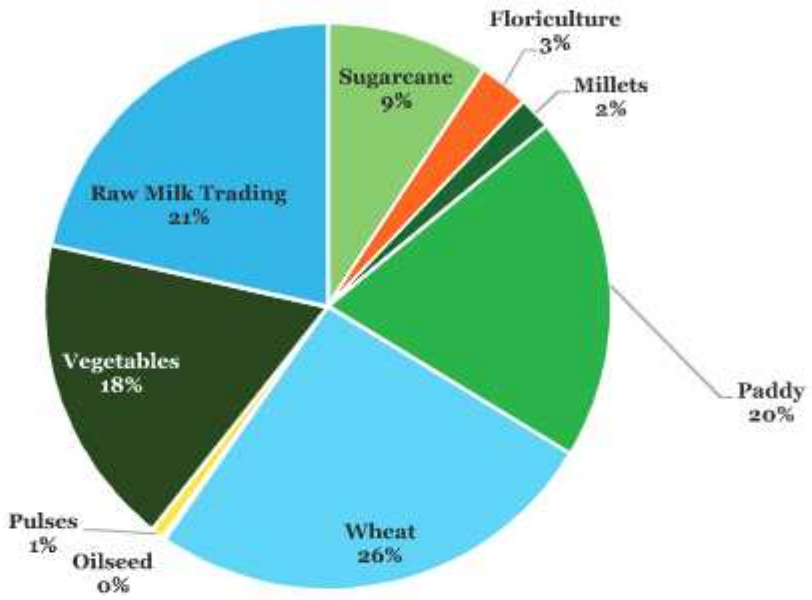
Potential Business Segment in 203 producer members



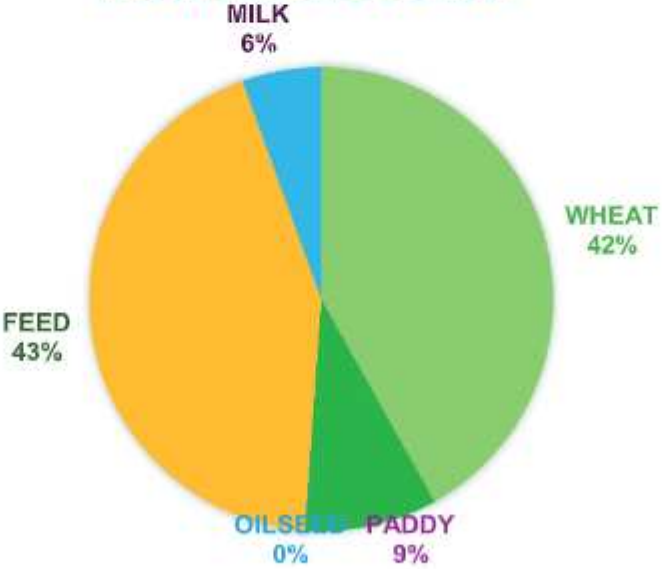
POTENTIAL INPUT BUSINESS SEGMENT



Trading Business Segment



POTENTIAL PROCESSING BUSINESS SEGMENMT OVER AND ABOVE TRADING BUSINSS



Chapter 10

Boundry Conditions / Barriers / Constraints

There are two types of boundary conditions applied on FPOs ecosystem. One is internal boundary conditions exist within the cluster and another one is external boundary conditions, which creates barriers and become, constraints to harness the available business potential for the FPOs. List of "Internal boundary conditions" are as under:

Category I : Internal Boundary Conditions

- *Lesser Gaps in input management*
- *Marketable Surplus*
- ***Financial Resources of FPO***
- *Infra and Support Services*
- *Demand Within the Cluster*
- *Competitive advantages*
- *Capacity to deliver business operation*
- ***Governance & Management of FPO***

- Most of the producers are small and marginal category in the FPO cluster. There is a large gap in input management when we compare small and marginal producers with medium and large farmers in terms of cost of means of production. Bringing all smallholders on same platform by equalising cost of means of production per unit land area through equalising cost of aggregatable input per unit quantity will justify the aggregation mechanism in input business model of the FPO. However, some of the issues and challenges in input business model of FPO are as under:

  1. Farm Mechanization on custom hiring constitutes **45.36%** of the total aggregatable input business. However, *farm power availability is found sufficient (**6.25 Kw/Ha**)* in sample producers to meet farm energy requirements. Farm mechanization segment of aggregatable inputs in the cluster of FPO is limited to establishment of diversified machines / implements only. Hence, capital investment requirement is limited to diversified machines and implements such as paddy trans-planter, sugarcane planter, sugarcane harvester. FPO is not having sufficient reserves and surplus for the capital investment for these diversified machines/implements.
  2. **24%** of the total aggregatable input business comes from fertilizers, which have thin margin (1-2%), but it is an essential component of input business, which blocks 24% working capital.
  3. **Only the remaining 30.54% of t**he total aggregate-able input business is available for meeting its annual fixed operating cost, thereby there is need to further increase the economic cluster size of the FPO.

- Annual marketed surplus of paddy with 203 sample members is limited to 4429 quintals only compared to the BEP of 6971 quintals required for 4 MT/hr capacity of rice milling (minimum capacity required for getting licence for paddy procurement and processing on MSP). However, there are 659 other producers members who are not covered in value chain mapping might have sufficient marketable surplus to compensate the required gap.
- *Mobilization of financial resources is the biggest challenge for FPO to harness identified business opportunities in respect of input and output business both.*
- Except milk procurement and processing business, FPO is lacking infrastructure and support services in terms of farm mechanization segment, storage and plant machinery for rice milling, oil milling and feed manufacturing units.
- Demand is not a problem for agriculture as well as allied agriculture sector while taking care of value chain integration of paddy, maize, mustard in convergence with dairy value chains.
- As per value chain analysis of the multiple value chains, it is observed that FPO is found competitive value chain actors in most of the identified business potential. Value chain integration of agriculture with allied agri (dairy sector) make enabler competitiveness.
- Capacity of FPO needs to be enhanced by multiple doze of capacity building program and mentorship by professionals along with appointment of competent CEOs with experience in agri-business management.
- *Governance and management is also a challenging task for FPO. This aspect needs special attention. "Integrity", "intelligence" and "Energy" must be a sole criteria for eligibility of BODs. This needs to be incorporated by making amendment in AoA of FPO.*
- *Lesser Seed demand within the cluster of the FPO does not make seed processing unit feasible economic activity.*

Category II : External Boundary Conditions

External boundary conditions are those barriers, which creates constraints in effective and efficient functioning of prevailing agri and allied value chains (AAAVCs).

Some of the external barriers exist in FPO system have been identified and illustrated in Box items.

- *Requisite legal and statuary compliances*
- *Extent of "enabling environment of the supporting value chain actors"*
- *Market barriers*
- *Culture of advance credit*
- *Side selling culture*
- *FPO Financing*

- Cumbersome process of legal and strict compliances with high level of penalty provisions is barriers for FPO in nascent stage.

- Obtaining procurement licence from the State Government is tedious, time consuming and lengthy documentation are barriers for trading business of marketable surplus especially on MSP.
- To obtain procurement licence under MSP regime requires establishment of minimum processing capacity of 4 MT/Hr in case of paddy produce.
- *FPO has to maintain Rs.50 Lakh in their bank account or bank guarantee for equivalent amount is the prerequisite condition for obtaining procurement centre under MSP.*
- Fixed deposit has to be deposited in favour of civil supply department, Government of Uttar Pradesh as security of bags, which is required for procurement on MSP procurement.
- *There is no mechanism of receivable finance available to FPO to make payment to their producer members. FPO needs to make payment of MSP procurement first from their own financial resources then FPO makes reimbursement claims with cumbersome documentations against supplied produce to FCI. There is delay in settlement of the claims, which is varying from 15 to 45 days affecting liquidity management and increasing interest on working capital.*
- As such there is no market barriers for FPO. Value chain integration of agri with allied agri value chains (dairy sector) will reduce much dependency on distant market.
- FPO financing is also a biggest challenge for FPO because of lack of credit history, sustainable business plan, collateral security and issue of governance and management of FPO. . However, NABKISAN, Sammunati finance limited and Commercial Banks have started FPO financing proactively after creation of enabling environment like setting up Agriculture Infrastructure Find (AIF), Credit Guarantee Fund (CGF) Scheme for FPOs etc,.

Chapter 11

Marketing Strategy

As per value chain analysis and also identification of viable economic activities in the cluster area following business opportunities are available in the cluster area-

- **Input Business** for wheat, paddy, millet, mustard, pulses (urad), Sugarcane, vegetables and horticulture crops (floriculture and medicinal plants like Aswagandha) grown in the cluster area which includes business of seeds, fertilizers, pesticides and farm mechanization.
- **Trading Business** for Wheat, Paddy, millet and sugarcane both through MSP and through open market
- **Processing Business** includes primary and secondary processing of Paddy, wheat, millet and Mustard.
- **Business related to Dairy sector** includes input business like animal feed, medicines, nutrients, consultancy & Insurance and output business like collection and sell of milk, processed milk products, vermicompost and organic pesticides with the help of cow urine and other herbs.

The marketing strategy, risk involved, market segment and pitching of the product for each segment of business opportunities available in the cluster area as mentioned above will be different. In some cases it may overlap with the other segment but a prudent decision should be undertaken by the FPO regarding what to sell, where to sell, when to sell, whom to sell and How to sell.

Marketing strategy for input business

Input business is regarded as low risk business. In the cluster area, there is a potential for the business of seed, fertilizer, pesticide and farm mechanization related to wheat, paddy, millet, mustard, pulses (urad), Sugarcane and horticulture crops (vegetables, floriculture and medicinal plants like Aswagandha) grown in the cluster area of the FPO which involves both the cropping season of kharif and Rabi. On the other hand, the cluster has also potential of input business related to dairy sector which includes animal feed, medicines, nutrients, consultancy & Insurance. The marketing strategy for input business by the FPO should be as follows -

1. The input requirements (Seed, Fertilizer, pesticides etc.) of the farmers in quantitative terms in the cluster area and in nearby area should first be calculated preferably on weekly basis and accordingly such stocks should be made available with the FPO. From the sample of approximately 200 farmers of the cluster area, projection has already been made in previous chapters. It is evident from the survey that the FPO has huge potential of market within the cluster.
2. The FPO should also know the preference of the farmers for seeds, pesticides, nutrients and accordingly such products should be made available to them at competitive price.
3. If the FPO wants to introduce new products (seed, pesticides, plant nutrients, animal feed etc.) first experiment and demonstrate the product with few farmers and once satisfied with the output of the product then only introduce such products for wider customer.

4. In rural marketing, quality of product and timely delivery of the products are very important to win the confidence of the customers and also for building a long term relationship with the customers. Never compromise with quality, quantity and timely delivery of the product.
5. The price of the input products are another important factor. Can our FPO offer inputs at lower price to our customer from the existing market price? Here, we can keep differential price mechanism. For example, for shareholders of FPO, Rs. 01/- per kg less than market price and for other customer 25 Paise per kg. less than market price.
6. For input business, the FPO should also take the dealership of such input products which are in demand and also such products which they have experimented that the output is good.
7. For earning better margin in input business, it is essential that the flow of inputs from the dealers/ suppliers to customer should be minimized and minimum stocks are kept idle. For the purpose, detail calculation of demand and likely flow of products should be calculated on weekly basis.
8. To avoid damage of input products, the storage facility should also be kept in mind and it should be free from rat, moisture etc.
9. The FPO is operating in 27 villages. It will be prudent decision if the FPO makes storage facilities of input products at 02-03 strategic locations in their cluster area to reduce the operational cost.

Marketing strategy for trading business

In the cluster area, there is a potential for trading business of wheat, Paddy, millet and sugarcane. For trading business the FPO has following options –

- Selling the produce after aggregation raw to raw through MSP or in open market
- Trading/Distribution/ Retailing of Primary Processed Produces
- Trading/Distribution/ Retailing of Secondary Processed Products
- Trading/Distribution/ Retailing of Tertiary Processed Products

The analysis of the nearby market reveals that there are three major segments of the market as far as Paddy, Wheat, millet, sugarcane and animal feed are concern–

However, it is recommended that the FPO should preferably sell their aggregated paddy and wheat through MSP gateway which will give them better margin. However, they should educate the farmers that only such variety of paddy should be cultivated which has more than 67% conversion ratio for getting better price through MSP route.

The total output of mustard and millet in the cluster area can be used for animal feed production business which is available in the cluster area apart from other bye products from paddy. The combination of such products available in the cluster area gives opportunity to the FPO to think about animal feed business initially keeping in view the cluster area customer.

For trading business, the marketing strategy should be based on the market demand of the product in local and distant market.

Demand based business

The FPO has a good number of shareholders spread over 27 villages in 04 blocks of the district. The shareholders are also consumer of various products used into day to day life like spices, tea leaf, vegetables, fruits, pulses, animal feed, edible oil etc. Such demand of the shareholders can be carefully surveyed and such products can be selected to be supplied to shareholders and other members of the villages at their door step at competitive price where the FPO is comfortable in handling such products keeping in view the storage, packaging, transport, delivery etc. A few FPOs have adopted this demand based business model and they are not only earning a handsome margin in such model but they are also mobilizing more number of shareholders due to differential price strategy.

Suggestive Marketing strategy

The major products of the FPO where sufficient marketable surplus is available with the FPO includes paddy, wheat, millet, sugarcane, pulses (Urad), horticulture crops (vegetables, floriculture and medicinal plants like Aswagandha) and dairy sector. Apart from the above, the FPO has also good opportunity for input business in 27 villages.

For marketing of inputs the FPO should concentrate in the cluster area targeting the 27 villages in saturation mode and as per the business capacity of the FPO.

For cereals they can explore the possibility of taking MSP route for major crops like wheat and paddy. The FPO can try to get the license for procurement of paddy and wheat from State Govt. agencies. It was told during the FGD that the farmers have good access to local mandi for selling of fine variety of paddy (Taj variety) grown by majority of the farmers.

If the FPO plans for processing of paddy, wheat and mustard in a phased manner, it should also explore the possibility of selling the processed item in the cluster area (27 villages) where approximately 25-35% of the processed items of such products can be consumed by the local farmers.

The rural mart run by the POPI under grant assistance from NABARD can also be utilized as retail outlet for the products manufactured/prepared by the FPO.

Regarding potential available in dairy sector in the cluster area, the FPO can undertake animal feed business and dairy business both. For marketing of animal feed, the FPO should initially concentrate in 27 villages and nearby area of the cluster. Once the product is established they should think to upscale it. For dairy products (milk, paneer etc) the FPO should explore the possibility of tie up arrangement with institutional buyers which are available in Bareilly.

For marketing of horticulture product (vegetables, floriculture etc.), it is suggested that the FPO should collect the data of market rate of such products in local market/mandi on a time scale of atleast one year. Accordingly, they should first decide the date of selling in volume as per the higher rates of that particular product in the market and also as per the marketable surplus available in the cluster area. As

per the date of selling, the date of sowing, transplantation, weeding, harvesting etc. should be decided with uniform SOP prescribed and monitored by FPO. It means the variety of seed, date of sowing, date of field preparation, doze of fertilizer and pesticides will be uniform for all the farmers willing to participate in the venture. It will give them volume of production on a particular date and increase their bargaining power with the buyers.

FPO GRID : Innovative Market Delivery System

A FPO GRID is a networking of existing / newly formed FPOs within particular geographic locations. It may be a network of FPOs within the State or in two or more States come together without graduating it into any higher level federation/s.

Importance of FPO-GRID ?

1. It will provide easy market assess to nascent FPOs with minimum efforts and low transaction cost.
2. One more level of mediator can be reduced outside the District/Division.
3. Most of the FPOs are doing business of specific commodity like seed production, dairy, poultry, banana, mushroom etc. Hence, during lean period and when there is no own marketable surplus produces for marketing, in that period produce / products of other FPOs can be traded in their cluster or through the APMC- Mandi.
4. Provides a platform to undertake trading business of agriculture produces/inputs of other FPOs in own area which will give additional margins to FPOs. Here input of one FPO can be output for other FPOs in the grid.
5. Ultimately it will increase economic size of the business, lowering risk, increase margin and a vibrant marketing network can emerge in due course which is necessary for the sustainability of the FPOs.

FPO-Grid for Common Infrastructure and Support Services

Some FPOs are not having sufficient marketable surplus to achieve breakeven point as per the required economies of scale. They are unable to participate as processor value chain actors in prevailing value chains because of lack of financial resources, inability to comply legal compliances and not found eligible due to Government policy. For example, to obtain procurement centre on MSP, FPO must have to mobilise at least Rs.50 lakh in their bank account or equivalent bank guarantee and has to establish rice mill of minimum capacity of 4MT/hr. In such case FPO-grid can help to them to provide infrastructure and support services on rental basis.

FPO-Grid for Common Accounting and Management System

Presently FPOs are paying Rs.1,20,000 to Rs.1,50,000/- annually to accountants while business transactions per month is very less. After making FPO-Grid, a common accounting digitally linked centre can be established comprising one common Charted Account and 3-5 Accountants for 50 to 100 FPOs. This will reduce cost of accounting from Rs.1.2 Lakh to Rs.1.5 Lakh to Rs.50,000 per FPO per year.

Penalties because of delay in compliances will also reduce drastically and third party digital credit history will also help to get finance from financial institutions.

In future, two level professional management can also be institutionalised by deploying primary CEOs at FPO level and highly profession CEOs for second tier i.e FPO grid level.

Chapter 12

Financial Planning

Financial Plan : Ecosystem

While making financial planning of FPO following quantitative factors have been considered, which are as under :

- Assessed Business Potential as per the techno-economic feasibility of identified economic activities as per the VCA Analysis
- Formulated Business Models
- Segment-wise Potential of business opportunities
- Prioritization – Stepping Business strategy
- Segment-wise economics
  - ✓ Quantum and flow rate of required inputs
  - ✓ Quantum and flow rate of marketable surplus
  - ✓ Average price of purchase
  - ✓ Cost of Value Addition
  - ✓ Average selling price
  - ✓ Average Operation Margins / Market Margin
  - ✓ Capital Cost required for infrastructure and support services

Assumptions taken for financial planning

1	Equity share has been is taken as per the BS for the Year 2021-22	
2	There is no equity grant, hence taken NIL	
3	Reserves and surplus has been calculated on cumulative basis	
4	Repair and maintenance has been taken @10%	
5	Cost escalation on establishment has been taken @ 10% on annual basis	
6	Discount on input business / premium price in case of procurement is considered 25% of the gross margin	
7	**Segment wise Gross Margins**	**Margin**
a	Seed	15.15%
b	Fertilizer	2.38%
c	Plant Protection	14.29%
d	Farm Mechanization	8%
8	Grant assistance received if any taken as revenue to meet out operational expenditure	

Balancing "**Use of fund**" and "**financial resources**" within boundary conditions of FPO's ecosystem has been considered the basis of formulation of financial plan of FPO as under:

	SOURCES OF FUND		USE OF FUND
1	Equity Share	1	Office Rent
2	Equity Grant	2	Salary of CEO
3	Member and or Director's Debt	3	Salary of Accountant
4	Other Grant (CSS of FPO)	4	Utility Charges
5	Intt, and Capital Subsidies	5	Travel Cost
6	CSR Fund	6	Audit Charges
7	Reserve and Surplus	7	Other Expenses
8	Bank Credit	8	Repayment of Principal
9	Any Other Fund	9	Repayment of Interest
10	Donations / Gift / Awards	10	Working Fund for identified and planed business operation
		A	Aggregate-able Input Business at FPO level for Agri-Production
		B	Trading Business of Paddy
		C	Trading Business of Millets
		D	Trading Business of Mustard
		E	Paddy Processing Business over and above trading business
		F	Oil Seed Processing Business over and above trading business
		G	Animal Feed Manufacturing business over and ab0ve trading and secondary processing business of paddy and oilseed
		H	Trading Business of Milk
		I	Processing Business of Milk over and above trading of milk
		J	Animal Health Business
	Total		**Total**

Suggested 3 Year Financial Plan for 203 sample producers

Bareilly Agro Farmer Producer Company Limited, Bareilly (U.P.)

(Rs. in Lakh)

S. No.	Particulars	Year	1 Year	2 Year	3 Year
I	**Share Holders**	Number	862	862	862
II	Nominal Value of Share / Member	Rs.			
A	**Source of Fund**		**1 Year**	**2 Year**	**3 Year**
i	Authorised Capital		**10.00**	**10.00**	**10.00**
ii	Equity Share (Paid up Capital)		5.01	5.01	5.01
iii	Reserve and Surplus	**From Profit**	1.32	8.79	23.39
iv	Operating Profit				

v	Equity Grant (Maximum Rs.15 Lakh)	**15 Lakh**			
vi	Directors Debt				
vii	Other Grant (CSS of FPO)				
Viii	Bank Credit		25.00	25.00	25.00
	Total		**31.33**	**38.80**	**53.40**
B	**Use of Fund**		**1 Year**	**2 Year**	**3 Year**
I	**Preliminary Expenditure**				
i	Registration Fees				
ii	Establishment Charges				
iii	Repair and Maintenance			0.00	0.00
iv	Expenses on Various Licences				
	Sub Total		**0.00**	**0.00**	**0.00**
II	**Administrative and Operational Cost**				
i	Office Rent		0.84	0.92	1.01
ii	Salary of CEO		3.00	3.3	3.63
iii	Salary of Accountant		1.20	1.32	1.45
iv	Advertisement Charges		0.05	0.06	0.07
v	Travel Cost		0.11	0.12	0.13
vi	Audit Charges		0.10	0.11	0.12
vii	Insurances		0.11	0.12	0.13
	Printing and Stationary		0.10	0.11	0.12
viii	Repayment of Principal				
ix	Repayment of Interest @ 9.25%		2.31	2.31	2.31
x	Miscell Charges (training etc.)		0.19	0.2	0.21
	Operating Expenses		**8.01**	**8.5725**	**9.18**
	Total Expenses		**8.01**	**8.57**	**9.18**
	Working Fund Available for Business		**23.32**	**30.23**	**44.22**
	Deployment of available Fund	**Segment**			
	Utilised (Input Business)	Input	21.20	21.20	21.20
	Utilised (Trading)	Milk Procurement	2.12	3.21	3.21
	Utilised (Trading)	Millets			
	Utilised (Trading)	Paddy		5.82	19.81
	Utilised (Trading)	Wheat		5.82	19.81
	Utilised (Trading)	Pulses			
	Utilised (Processing)				
	Total Deployment of Fund		**23.32**	**30.23**	**44.22**

C	Business Operation	B. Potential (Rs. in Lakh)	1 Year	2 Year	3 Year
I	**Input Business**	90.88	90.88	90.88	90.88
	Total		**90.88**	**90.88**	**90.88**
II	**Trading Business**				
1	Sugarcane	44.84			
2	Floriculture	13.89			
3	Millets	9.14			
4	Paddy	95.38		23.26	79.22
5	Wheat	126.12		23.26	79.22
6	Oilseed	0.81			
7	Pulses	3.51			
8	Vegetables	86.56			
	Sub-Total	**380.25**	**0.00**	**46.52**	**158.44**
9	Trading of Milk (993 LPD)	104.26	69.67	104.26	104.26
	Total Trading Business	**484.51**	**69.67**	**150.78**	**262.70**
III	**Processing Business**				
1	Wheat (over and above trading business)	85.99			
2	Paddy (over and above trading business)	18.89			
3	Oil Seed (over and above trading business)	0.11			
4	Manufacturing Animal Feed	0.00			
5	Conventional Feed for 254 sample animals	33.38			
6	Commercial Feed for 254 sample animals	55.63			
7	Processing Business of Milk over and above trading of milk (making 35748 Kg Paneer)	11.33			
	Total Processing Business	**205.33**			
IV	**Animal Health**				
1	Consultancy	3.25			
2	Medicines	3.27			
3	Nutrients	2.56			
	Total Animal Health Business	**9.08**			
	Grand Total	**789.80**	**160.55**	**241.66**	**353.58**
D	**Gross Margin**		20.64	30.89	38.15
E	Discount (Input)/ Premium Price (output)		5.16	7.72	9.54
F	**Operating Profit**		**7.47**	**14.60**	**19.43**

PART B : Profit and Loss Account of three years Business

S. No.	Particulars	I Year	II Year	III Year
a	Revenue from business Operation	**160.55**	**241.66**	**353.58**
b	Grant/Assistance for Operation	0.00	0.00	0.00
c	Other Revenue			
I	**Total Revenue**	**160.55**	**241.66**	**353.58**
a	Procurement + Marketing Cost	139.91	210.77	315.43
b	Expenses on establishment / Discount	13.17	16.29	18.72
c	Intt on working Capital included in establishment cost			
d	Other Expenses			
e	Depreciation on Assets			
II	**Total Expenditure**	**153.08**	**227.06**	**334.15**
I-II	**Profit before Tax**	**7.47**	**14.60**	**19.43**
III	Tax (if Any)			
I-II-III	**Profit / Loss (Transfer to Reserve Fund)**	**7.47**	**14.60**	**19.43**

Chapter 13

Summary and Conclusion

Business planning of FPOs is the comprehensive document containing clear, realistic financial projections based on value chain analysis of actors and factors shows proof of forethought, which sets the business path line and describe *"what FPO intend to do"*, *"How FPO intend to do"* and *"What FPO need to get it done"*.

Business planning of FPOs needs differentiated approach for differential distribution of marketing cost and marketing margins across the modified / alternative value chains by incorporating FPOs as a value chain actor/s within sets of internal and external boundary conditions and manageable risk/threats.

In view of the above facts, we have conceptualized 10 steps value chain approach for formulation of business plan namely - identifications of cluster, identifications of multiple value chains, qualitative and quantitative value chain mapping, identification of economic activities, value chain analysis, techno-economic feasibility of identified economic activities, assessment of boundary conditions, prioritization of economic activities, formulation of alternative value chains and formulation of business plan comprising assessment of business potential, marketing plan, financial plan and risk mitigation plan.

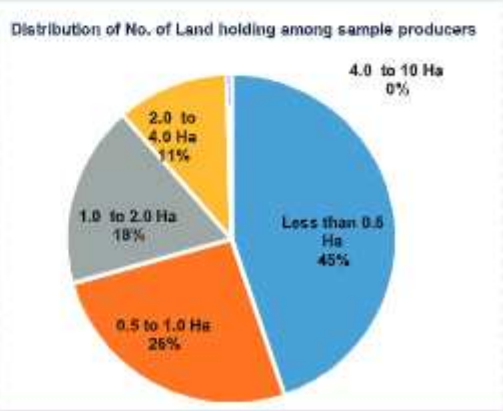
A guiding business plan has been formulated based on value chain mapping of 250 samples *applying value chain approach* and value chain mapping by conducting survey of 203 farmers residing in 27 villages of 4 blocks namely Meerganj, Fatehganj, Bhojipura and Kyara of Bareilly District. Value chain mapping of 2 commission agents, 5 traders / wholesalers, 7 milkman in prevailing value chains have also been undertaken along with focused group discussions with BODs and progressive members of FPO.

The cluster of FPO is unevenly spread over 27 villages in four blocks of the district. The FPO has 862 shareholders with authorised capital of Rs.10.00 Lakh and paid-up capital of Rs.5.01 lakh as on date. Producers are growing diversified crops, namely wheat, paddy, millets, sugarcane, pulses (urad), oilseed (mustard), vegetables, marry gold, satavar along with rearing dairy animals in majority and having a few goatary units. However, principal crops in the cluster of FPO are ***wheat, paddy, millets, sugarcane*** and **diary** under allied agriculture sector.

The highlights of the cluster area are given below based on the sample data of 203 producers which reflects the potential available under agriculture and allied sector in the cluster area.

Average land holding size of 203 Sample producers

- ✓ 203 producer members are growing eight major categories of diversified crops and producing 27583.38 quintal of total produces.
- ✓ The marketed surplus of 203 producer member was 25,161.63 quintal with total marketed value of Rs.304.04 Lakh in the year 2022-23.
- ✓ 134 dairy producers are producing 1250 LPD from 254 milch animals of which 993 LPD (79.44%) is the marketed surplus.



Input Business Planning

10 Steps methodology has been used for assessment of the input business potential of FPO, which are as under :

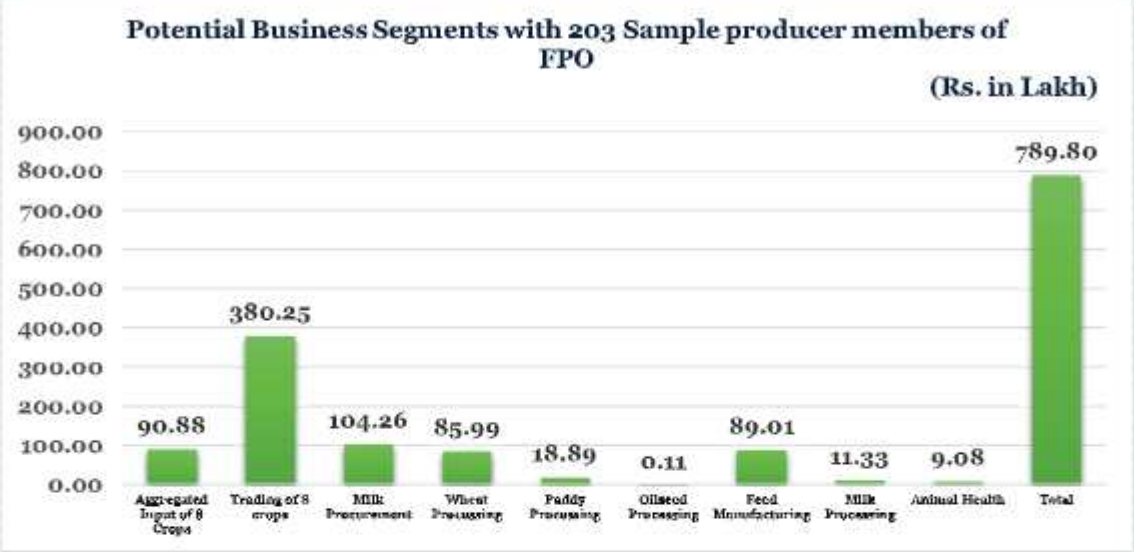
1. Value chain analysis of cost of means of production.
2. Identifications of the aggregatable inputs for FPO
3. Assessment of the Quantum of gross potential of aggregatable agricultural input business potential (GAIBP)
4. Assessment of the % of inputs purchased from market and potential of FM-CHC for FPO
5. Assessment of the quantum net agricultural aggregatable input business potential (NAIBP) after netting of step 4.
6. Segmentation of the NAIBP
7. Estimated gross margins in NAIBP based on business economics analysis of surveyed existing inputs suppliers in prevailing area.
8. Estimated annual fixed administrative cost of FPO and required provisions for extending cheaper inputs to producers, maintaining reserve and surplus for upscaling FPO's business and provision of risk premium.
9. Determined minimum requisite cluster size (Net Swon Area / Gross Cropped Area) required for FPO to achieve Break Even Point (BEP) for undertaking input business segment.
10. Quantification of the Minimum Input Business Potential to achieve BEP for FPO for each crop as well as for composite crops s per prevailing cropping pattern.

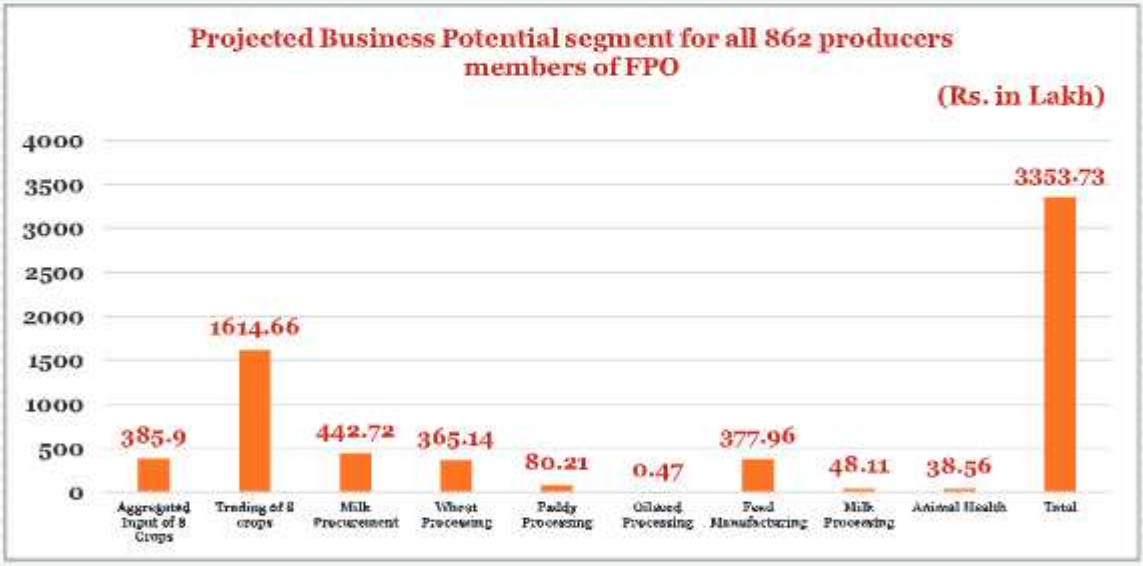
Excluding farm mechanization on custom hiring segment due to highly mechanised area, total aggregatable input business potential of FPO is worked out to Rs.90.08 Lakh and projected aggregatable input business potential for 862 producer members is coming to Rs.385.62 Lakh comprising aggregation of seed, fertilizers, plant protection and plant health (nutrition) segment.

OUTPUT BUSINESS PLANNING

Output business potentials have been worked out using marketed quantum of commodities were sold during the past years by producer-members, techno-economic feasibility of particular commodities and comparative analysis of business economics of each value chain actors in prevailing value chains vis-à-vis FPO as alterative value chain actor/s.

✓ Total annual business potential of 203 sample members estimated to Rs.789.80 lakh and projected business potential of all 862-producer member is Rs.3353.73 Lakh.





Marketing Plan

Input Business

1. The input requirements (Seed, Fertilizer, pesticides etc.) of the farmers in quantitative terms in the cluster area and in nearby area should first be calculated preferably on weekly basis and accordingly such stocks should be made available with the FPO. It is evident from the survey that the FPO has huge potential of market within the cluster.
2. The FPO should also know the preference of the farmers for seeds, pesticides, nutrients and accordingly such products should be made available to them at competitive price.

3. If the FPO wants to introduce new products (seed, pesticides, plant nutrients, animal feed etc.) first experiment and demonstrate the product with few farmers and once satisfied with the output of the product then only introduce such products for wider customer.
4. In rural marketing, quality of product and timely delivery of the products are very important to win the confidence of the customers and also for building a long-term relationship with the customers. Never compromise with quality, quantity, and timely delivery of the product.
5. The price of the input products is another important factor. Can our FPO offer inputs at lower price to our customer from the existing market price? Here, we can keep differential price mechanism. For example, for shareholders of FPO, Rs. 01/- per kg less than market price and for other customer 25 Paise per kg. less than market price.
6. For input business, the FPO should also take the dealership of such input products which are in demand and also such products which they have experimented that the output is good.
7. For earning better margins in input business segment, it is essential that the flow of inputs from the dealers/suppliers to customer should be minimized and minimum stocks are kept idle. For the purpose, detail calculation of demand and likely flow of products should be calculated on weekly basis.
8. To avoid damage of input products, the storage facility should also be kept in mind and it should be free from rat, moisture etc.
9. The FPO is operating in 27 villages. It will be prudent decision if the FPO makes storage facilities of input products at 02-03 strategic locations in their cluster area to reduce the operational cost.

Marketing Strategy for Trading Business

In the cluster area, there is a potential for trading business of wheat, Paddy, millet and sugarcane. For trading business the FPO has following options –

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However, it is recommended that the FPO should preferably sell their aggregated paddy and wheat through MSP gateway which will give them better margin. However, they should educate the farmers that only such variety of paddy should be cultivated which has more than 67% conversion ratio for getting better price through MSP route.

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combination of such products available in the cluster area gives opportunity to the FPO to think about animal feed business initially keeping in view the cluster area customer.

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The FPO has a good number of shareholders spread over 27 villages in 04 blocks of the district. The shareholders are also consumer of various products used into day to day life like spices, tea leaf, vegetables, fruits, pulses, animal feed, edible oil etc. Such demand of the shareholders can be carefully surveyed and such products can be selected to be supplied to shareholders and other members of the villages at their door step at competitive price where the FPO is comfortable in handling such products keeping in view the storage, packaging, transport, delivery etc. A few FPOs have adopted this demand based business model and they are not only earning a handsome margin in such model but they are also mobilizing more number of shareholders due to differential price strategy.

Financial Plan

Balancing "**Use of fund**" and "**financial resources**" within boundary conditions of FPO's ecosystem has been considered the basis of formulation of financial plan of FPO as under:

SOURCES OF FUND		USE OF FUND	
1	Equity Share	1	Office Rent
2	Equity Grant	2	Salary of CEO
3	Member and or Director's Debt	3	Salary of Accountant
4	Other Grant (CSS of FPO)	4	Utility Charges
5	Interest and Capital Subsidies	5	Travel Cost
6	CSR Fund	6	Audit Charges
7	Reserve and Surplus	7	Other Expenses
8	Bank Credit	8	Repayment of Principal
9	Any Other Fund	9	Repayment of Interest
10	Donations / Gift / Awards	10	**Deploying Working Fund** for identified and planed business operations
		10 A	Aggregate-able Input Business at FPO level for Agri-Production
		10 B	Trading Business of Paddy
		10 C	Trading Business of Millets
		10 D	Trading Business of Mustard
		10 E	Paddy Processing Business over and above trading business
		10 F	Oil Seed Processing Business over and above trading business
		10 G	Animal Feed Manufacturing business over and ab0ve trading and secondary processing business of paddy and oilseed
		10 H	Trading Business of Milk
		10 I	Processing Business of Milk over and above trading of milk
		10 J	Animal Health Business
Total			**Total**

Financial plan for prioritized business segment and considering internal and boundary conditions, suggestive financial plan for three-year period have been formulated. It is observed that within available resources of Rs. 31.33 Lakh, Rs. 38.80 Lakh and Rs.53.40 lakh, FPO can undertake business to the tune of Rs. 160.65 Lakh, 241.66 Lakh and Rs.353.58 lakh during first, second and third years, respectively. This will yield profit before tax to the tune of Rs. 7.47 Lakh, Rs.14.60 Lakh and Rs.1943 Lakh in respective years.

This financial plan can be further improved by breaking it into monthly financial plan and deploying available funds based on seasonality factor through liquidity management.

Though comprehensive risk mitigation plan is the fourth segment of step 10, which requires further research by different stakeholders of FPOs.

The basic aim to bring this guiding business plan applying value chain approach is to consider differential planning approach and further research, suggestions, improvement and diving deep in to FPO's planning regime by policy makers, researchers, implementors, promoting agencies, POPIs/CBBOs and individuals involved in promotion and development of FPOs.

Appendix I : Land Holding Pattern in Bareilly District

BLOCK	Land Holding Size (2015-16)																				
	Less than 0.5 Ha			0.5 to 1.0 Ha			1.0 to 2.0 Ha			2.0 to 4.0 Ha			4.0 to 10 Ha			10 Ha and Above			All Land		
	NO	Area	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Baheri	27781	6982	0.25	11746	7688	0.65	7078	9333	1.32	2650	7175	2.71	590	3338	5.66	24	290	12.08	49869	34806	0.7
Shergarh	16019	4589	0.29	6925	4894	0.71	3871	5040	1.3	1495	3907	2.61	335	1775	5.3	14	228	16.29	28659	20433	0.71
Kitchha	14794	4283	0.29	6105	4690	0.77	3300	4670	1.42	1337	3932	2.94	260	1376	5.29	10	174	17.4	25806	19125	0.74
Meerganj	13213	3933	0.3	5592	3799	0.68	3221	4088	1.27	1204	3227	2.68	242	1733	7.16	6	135	22.5	23478	16915	0.72
Fatehganj	13250	4069	0.31	5556	4078	0.73	3218	4397	1.37	1321	3328	2.52	234	750	3.21	9	130	14.44	23588	16752	0.71
Bhojipura	14099	4028	0.29	5459	4013	0.74	3378	4748	1.41	1162	3215	2.77	254	1282	5.05	10	129	12.9	24362	17415	0.71
Kyara	13326	3967	0.3	4767	3647	0.77	3149	4363	1.39	1235	3223	2.61	244	1289	5.28	12	136	11.33	22733	16625	0.73
Ramnagar	12773	3883	0.3	4871	3508	0.72	3048	4316	1.42	1175	3260	2.77	245	1548	6.32	8	177	22.13	22120	16692	0.75
Majhgawan	15965	4625	0.29	6473	5383	0.83	4603	5565	1.21	1531	4080	2.66	324	1697	5.24	11	160	14.55	28907	21510	0.74
Alampur Zafarbaad	21154	5730	0.27	7638	5185	0.68	4291	5532	1.29	1337	3828	2.86	391	2150	5.5	11	180	16.36	34822	22605	0.65
Bithari Chainpur	18384	5121	0.28	7328	5154	0.7	4864	5910	1.22	1802	4604	2.55	362	1636	4.52	16	144	9	32756	22569	0.69
Nawabganj	19475	5168	0.27	7510	4780	0.64	4963	6629	1.34	2074	5079	2.45	323	1510	4.67	6	201	33.5	34351	23367	0.68
Bhadpura	19120	4988	0.26	6067	4525	0.75	4378	5955	1.36	1706	4261	2.5	256	895	3.5	4	114	28.5	31531	20738	0.66
Bhoota	29024	7107	0.24	11669	7728	0.66	7171	8811	1.23	2675	7205	2.69	592	3296	5.57	16	261	16.31	51147	34408	0.67
Faridpur	24512	6410	0.26	9668	5896	0.61	5869	8335	1.42	1935	5415	2.8	451	2680	5.94	15	180	12	42450	28916	0.68
Total Rural	272889	74883	0.27	107374	74968	0.7	66402	87692	1.32	24639	65739	2.67	5103	26955	5.28	172	2639	15.34	476579	332876	0.7
Total Urban	3119	2235	0.72	2372	1134	0.48	1285	1708	1.33	488	1349	2.76	128	666	5.2	16	358	22.38	7408	7450	1.01
Total District	276008	77118	0.28	109746	76102	0.69	67687	89400	1.32	25127	67088	2.67	5231	27621	5.28	188	2997	15.94	483987	340326	0.7

Appendix II : Land Holding Pattern in concerned blocks of FPO

BLOCK	Land Holding Size (2015-16)																				
	Less than 0.5 Ha			0.5 to 1.0 Ha			1.0 to 2.0 Ha			2.0 to 4.0 Ha			4.0 to 10 Ha			10 Ha and Above			All Land		
	NO	Area	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS	संख्या	क्षेत्रफल	ALHS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Meerganj	13213	3933	0.3	5592	3799	0.68	3221	4088	1.27	1204	3227	2.68	242	1733	7.16	6	135	22.5	23478	16915	0.72
Fatehganj	13250	4069	0.31	5556	4078	0.73	3218	4397	1.37	1321	3328	2.52	234	750	3.21	9	130	14.44	23588	16752	0.71
Bhojipura	14099	4028	0.29	5459	4013	0.74	3378	4748	1.41	1162	3215	2.77	254	1282	5.05	10	129	12.9	24362	17415	0.71
Kyara	13326	3967	0.3	4767	3647	0.77	3149	4363	1.39	1235	3223	2.61	244	1289	5.28	12	136	11.33	22733	16625	0.73
All 4 Blocks	272889	74883	0.27	107374	74968	0.7	66402	87692	1.32	24639	65739	2.67	5103	26955	5.28	172	2639	15.34	476579	332876	0.7

Appendix III : Average Land Holding Pattern district, concerned blocks and in 203 sample producer members

BLOCK	Land Holding Size (2015-16)																				
	Less than 0.5 Ha			0.5 to 1.0 Ha			1.0 to 2.0 Ha			2.0 to 4.0 Ha			4.0 to 10 Ha			10 Ha and Above			All Land		
	NO	Area	ALHS	NO	Area	ALHS	NO	Area	ALHS	NO	Area	ALHS	NO	Area	ALHS	NO	Area	ALHS	NO	Area	ALHS
Total District	276008	77118	0.28	109746	76102	0.69	67687	89400	1.32	25127	67088	2.67	5231	27621	5.28	188	2997	15.94	483987	340326	0.7
All 4 Blocks	272889	74883	0.27	107374	74968	0.7	66402	87692	1.32	24639	65739	2.67	5103	26955	5.28	172	2639	15.34	476579	332876	0.7
Sample Saurvey	90	24.17	0.27	52	40.22	0.77	36	52.88	1.47	22	64.15	2.92	1	4.67	4.67				201	186.09	0.93

Appendix IV : Average Cost of Cultivation (Rs./acre)

	Name of Crop	Wheat	Paddy	Millet	Sugarcane	Pulses	Oilseed	Veg.	Horti.	All Crops
1	Family Labour (Hrs.) / Madays	9	12	10	20	5	5	45	67	22
2	Family Labour (Rs.)	3041	4202	2908	6588	1674	1432	14917	23689	7306
3	Attached Labour (Hrs.)	0	0	0	0	0	0	0	0	0
4	Attached Labour (Rs.)	0	0	0	1	0	0	0	0	0
5	Casual Labour (DAYS.)	12	9	7	167	5	6	30	44	35
6	Casual Labour (Rs.)	1823	2447	2199	5627	1589	1742	9445	20939	5726
7	Hired Animal Labour (Hrs.)	0	0	0	0	0	0	0	0	0
8	Hired Animal Labour (Rs.)	0	0	0	0	0	0	0	0	0
9	Owned Animal Labour (Hrs.)	0	0	0	0	0	0	0	0	0
10	Owned Animal Labour (Rs.)	0	0	0	0	0	0	0	0	0
11	Hired Machine (Hrs.)	3	4	3	3	2	2	3	5	3
12	Hired Machine (Rs.)	3284	3973	3907	3986	2531	2598	3293	5483	3632
13	Own Machine (Hrs.)	1	1	78	0	128	1	0	0	26
14	Own Machine (Rs.)	90	111	462	25	728	591	0	0	251
15	Hired Irrigation Machine (Hrs.)	19	27	15	48	4	2	52	83	31
16	Hired Irrigation Machine (Rs.)	2895	3921	1789	7713	466	236	5738	9985	4093
17	Owned Irrigation Machine (Hrs.)	5	7	4	5	3	4	1	7	5
18	Owned Irrigation Machine (Rs.)	520	757	462	566	305	473	161	787	504
19	Canal and Other Irrigation Charges (Rs)	8	8	0	0	0	0	0	0	2
20	Variety	0	1880	705	31	#DIV/0!	DESHI	1261	0	
21	Seed Qty. (Kg.) / Plantlets (Number)	96	53	74	27	342	1	2370	8261	1403
22	Seed Value (Rs.)	1875	1616	1103	8826	229	315	5251	7121	3292
23	Fertiliser (N) (Kg.)	101	105	96	350	56	56	75	131	121
24	Fertiliser (N) (Rs.)	583	583	580	671	329	331	442	794	539

25	Fertiliser (P) (Kg.)	26	23	32	37	38	148	19	6	41
26	Fertiliser (P) (Rs.)	186	209	132	191	91	10	282	95	150
27	Fertiliser (K) (Kg.)	60	57	74	12	63	171	32	87	70
28	Fertiliser (K) (Rs.)	690	724	774	286	479	364	560	1383	658
29	Other Fertiliser (Kg.)	37	45	35	68	38	152	40	24	55
30	Other Fertiliser (Rs.)	999	1005	836	887	545	336	938	1638	898
31	DAP (Kg)	77	99	71	287	67	149	339	59	144
32	DAP (Rs)	1204	1725	1393	2106	813	624	967	1547	1297
33	NPK (Kg)	11	12	40	7	55	256	0	3	48
34	NPK (Rs.)	142	24	0	197	0	0	0	89	57
35	Manure (Qtl.) FYM	26	17	0	7	0	0	12	67	16
36	Manure (Rs.) FYM	1167	690	0	285	0	0	736	1177	507
37	Insecticides (Rs.)	1146	1438	1415	1105	912	788	2612	5862	1910
38	Crop Insurance (Rs.)	230	242	0	827	0	0	104	0	175
39	Miscellaneous Cost (Rs.)	672	813	469	1257	292	285	1111	3224	1015
40	Land Revenue (Rs.) LAGAN	0	0	0	0	0	0	0	0	0
41	Rent Paid for Leased in Land (Rs.)	614	195	0	42	0	0	0	1969	353
42	Interest on working capital rate KCC	0	0	0	0	0	0	0	0	0
Rs./acre	Variable Cost cultivation in area under crop	**21169**	**24683**	**18429**	**41186**	**10983**	**10125**	**46557**	**85782**	32364
Rs/ha	Total Variable Cost per Ha	**53769**	**62695**	**46810**	**104612**	**27897**	**25718**	**118255**	**217886**	82205

Appendix V : Aggregatable Inputs at FPO level (Rs./acre)

S. No	Name of Crop	Wheat	Paddy	Millet	Sugarcane	Pulses	Oilseed	Veg.	Horti.	All Crops
1	Hired Machine (Rs.)	3284	3973	3907	3986	2531	2598	3293	5483	3632
2	Hired Irrigation Machine (Rs.)	2895	3921	1789	7713	466	236	5738	9985	4093
3	Seed Value (Rs.)	1875	1616	1103	8826	229	315	5251	7121	3292
4	Fertiliser (N) (Rs.)	583	583	580	671	329	331	442	794	539
5	Fertiliser (P) (Rs.)	186	209	132	191	91	10	282	95	150
6	Fertiliser (K) (Rs.)	690	724	774	286	479	364	560	1383	658
7	Other Fertiliser (Rs.)	999	1005	836	887	545	336	938	1638	898
8	DAP (Rs)	1204	1725	1393	2106	813	624	967	1547	1297
9	NPK (Rs.)	142	24	0	197	0	0	0	89	57
10	Manure (Rs.) FYM	1167	690	0	285	0	0	736	1177	507
11	Insecticides (Rs.)	1146	1438	1415	1105	912	788	2612	5862	1910
	TOTAL	**14171**	**15908**	**11929**	**26253**	**6395**	**5602**	**20819**	**35174**	**17033**
Proportion of Cost of Cultivation (aggregated)		**66.94%**	**64.45%**	**64.73%**	**63.74%**	**58.23%**	**55.33%**	**44.72%**	**41.00%**	**52.63%**

Appendix VI : Aggregatable Segment at FPO level (Rs./acre)

Name of Crop	Wheat	Paddy	Millet	Sugarcane	Pulses	Oilseed	Veg.	Horti.	All Crops	%
Farm Mechanization – CHC*	6179	7894	5696	11699	2997	2834	9031	15468	7725	45.36%
SEED	1875	1616	1103	8826	229	315	5251	7121	3292	19.33%
FERTILIZER	4971	4960	3715	4623	2257	1665	3925	6723	4105	24.10%
Plant Protection	1146	1438	1415	1105	912	788	2612	5862	1910	11.21%
Total	**14171**	**15908**	**11929**	**26253**	**6395**	**5602**	**20819**	**35174**	**17031**	**100.00%**

**Availability of farm power is sufficient, hence, there is NIL business opportunity to FPO except to fulfil gap of FM diversifications.*

Appendix VII : Gross Margins in Aggregatable Inputs (Rs./acre)

CROP	Wheat	Paddy	Millet	Sugarcane	Pulses	Oilseed	Veg.	Horti.	All Crops
Farm Mechanization -CHC	494	632	456	936	240	227	722	1237	556
SEED	284	245	167	1337	35	48	796	1079	319
FERTILIZER	118	118	88	110	54	40	93	160	111
Plant Protection	164	205	202	158	130	113	373	838	193
Total	**1060**	**1200**	**913**	**2541**	**459**	**428**	**1984**	**3314**	**1179**

Appendix VIII : Area (acre), Production (quintal) and Productivity during last three years in 203 sample producers

S. No	Crop	2019-20			2020-21			2021-22			Average three years		
		A	P	Y	A	P	Y	A	P	Y	A	P	Y
1	Sugarcane	39.95	11280	717.18	38.61	11010	724.3	60.66	12745	533.67	48.11	13111.7	692.24
2		13.38	305	57.9	13.38	305	57.9	13.38	305	57.9	13.38	305	57.9
3	Millets	34.31	456	33.76	34.31	456	33.76	34.31	456	33.76	34.31	456	33.76
4	Paddy	355.89	6051.25	43.19	414.36	5883.25	36.06	401.53	6044.5	38.24	390.6	5993	38.97
5	Wheat	492.63	7748.25	39.95	501.9	7691.25	38.92	504.64	7789.25	39.21	497.73	7742.94	39.51
6	Oilseed	4.19	7.625	4.62	4.19	6.625	4.02	4.19	6.625	4.02	4.19	6.96	4.22
7	Pulses	89.93	230.75	6.52	89.93	231.75	6.55	89.93	227.75	6.43	89.93	230.09	6.5
8	Vegetables	48.48	1681.75	88.11	48.48	1691.75	88.64	48.48	1681.75	88.11	48.48	1685.08	88.29
	Total	**1078.76**	**27760.625**		**1145.16**	**27275.625**		**1157.12**	**29255.875**		**1126.73**	**29530.70**	

Appendix IX : Marketed surplus during the year 2022-23 among sample producers

S. No	Crop	Production	Marketed Surplus (q)	Realised Value (Rs. Lakh))	Min Rate (Rs./q)	Max Rate (Rs./q)	Min Selling Value (Rs. Lakh)	Max Selling Value (Rs. Lakh)	Avetage Selling Value (Rs. Lakh)
1	Sugarcane	13111.67	12890	43.18	318	357	40.58	45.4	42.99
2	Floriculture	305	305	12.6	4050	4555	12.55	14.69	13.62
3	Millets	456	419.5	8.41	1996	2178	8.38	9.17	8.78
4	Paddy	5993	4429	84.08	1861	2156	78.39	86.41	82.4
5	Wheat	7742.94	5886	119.24	1941	2153	115.03	124.71	119.87
6	Oilseed	6.96	6.63	8.62	10433	12200	0.57	0.66	0.62
7	Pulses	230.09	52.75	3.29	6143	7189	3.25	3.83	3.54
8	Vegetables	1685.08	1681.75	35.1	3589	5147	38.29	68.34	53.32
	Total	**29530.74**	**25670.63**	**314.52**			**297.04**	**353.21**	**325.14**

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