

Project Design Document: Greening of Rural value chains for Strawberry

Project Background

In India strawberries are grown in Maharashtra, Himachal Pradesh, Uttar Pradesh, Delhi, Haryana, West Bengal and Rajasthan. With the exception of Himachal Pradesh, only a portion of the states are ideal for strawberry cultivation. In Maharashtra, they are cultivated in western hill top and satpura range, which have ideal weather conditions.

Ba Aakadata Shetkari Vikas Gat in Walamba (Ka) village of Akkalkuwa taluka of Nandurbar district of Maharashtra was formed in 2021, with 110 shareholders, including ten women. Total area under strawberry cultivation is around 60 acres. The shareholders are from nearby villages. The FPO is currently engaged in activities like procuring strawberry plants and delivering them to farmers and mobilizing farmers to sell their produce collectively. The FPO plans to set up a strawberry processing plant. The FPO is intended to procure strawberries from shareholders and prepare strawberry crush and other products in future.

Project Description

The project aims at increasing the scale of operations of the processing unit, diversification of its products, decarbonisation of the energy vector with renewable energy assets and support for market linkages by enabling the branding of the manufactured products. The project envisages the accomplishment of these objectives through purchasing the following equipment:

1. **20 kW solar photovoltaic panels systems and battery storage equipment** - Cumulative total savings on energy consumption amount to 27500 units annually, which equals to 22 tonnes of CO₂ emissions mitigated annually, assuming 6 hours of daily generation for 250 days in a year. The initial investment is compensated for by savings in electricity bills to be incurred regularly for the operation of the plant at an average variable electricity cost of INR 10/kWh, while also accommodating the operation of expanded activities like bakery, packaging and branding.
2. **Extension of scope of operations with additional equipment** for further value addition to fetch better prices, including equipment for crush unit, packaging unit for packaging and branding.
3. **Supporting the FPO in certification of their products** which would further improve the marketability of the product.

Summary of Investments

Total capital cost is expected to be close to INR 27 lakhs that includes design, engineering, procurement, installation, first year operations and support in packaging and branding. Table below summarizes the project components and the investment requirements.

Table 1: Capital Costs for the project

S · N o	Technology	Unit	Capa city	Qty (Nos.)	Cost (Rs/u nit)	Valu e (Rs.)	Cost sharing			Sharing (%)	Relevant schemes
							FPO equi ty**	Govt subsi dy	Loa n		
1	Project Cost*				26,74,500	26,74,500					
	Solar photovoltaic panel system with battery	kW	20	1	10,00,000	10,00,000					
	Washer Machine	kg/hr	100	1	80000						
	Grinding			2	150000						
	Pulper Machine	kg/hr	100	1	45000						
	Steam Kettle (Thermic fluid)	liter	250	1	135000						
	Pasteurizer Machine	liter	100	1	120000						
	Insulated Liquid Storage Tank	kg/hr	100	1	83000						
	Weighing Machine	kg/hr	100		20000						
2	Branding and Packaging				150000						
	Packaging Unit				125000						
	Bar Coding Machine				25000						
3	Land Cost				0						
	Total					2,674,500	267,450	936,075	1,470,975	10:35:55	

PMFME,
point iii and
iv

									5		
--	--	--	--	--	--	--	--	--	---	--	--

Source: MP Ensystems Research

*Project cost includes all costs (plant and machinery, solar photovoltaic panel costs, et al), excluding land cost

**Based on discussions held on ground and their financial conditions, equity share ranges from 5% to 15%, hence has been assumed at 10%

Barriers addressed in the project implementation:

The FPO has been aspiring to work for improving the income levels of farmers in the region through procurement of their produce locally at remunerative prices and distribute the profits generated through the operations of the plant as dividend at a later stage. The key barriers addressed through the proposed project implementation are listed below.

Table 2: Barriers addressed through the project

Barriers	How the proposed project will address barriers through net-zero carbon solutions
Frequent power outages, reliance on diesel generator sets as backup, high operation expenses	Installation of a rooftop solar panels which eliminates carbon emissions while ensuring continued power availability at minimal costs
Limited scope of operations	Addition of processing unit to produce more value-added products, which have greater visibility and fetch better prices
Market Access	The packaging machine helps shape the brand identity of the products which improves market access.

Source: MP Ensystems Research

Financial Analysis

A simple cash-flow analysis is below, with the conservative assumption that the equipment has a lifespan of 10 years.

Project Cost

The major components of a small-scale fruit processing unit are land, building and civil works. A project cost of **INR 26.75 Lakhs** has been estimated. The details of project cost are given in **Table 3**

Table 3: Total Project Cost

Project Cost

S. No.	Particulars	Unit	Qty.	Rate (Rs.)	Amount (Rs. Lakh)
1	Land	acre	0.5	0	0
2	Land Development				3.566
3	Civil Work				3.566
4	Plant and Machinery				17.83
5	Miscellaneous fixed assets				0.8915
6	Preliminary and Preoperative expenses				0.8915
	Total				26.745

Source: MP Ensystems Research

Operational Expenses

The operational expenditure incurred under different heads is as specified in Table 4. The operational expenditure is expected to grow at an annual rate of 5%.

Table 4: Operational expenditure

Manpower Requirement				
S. no.	Personnel	Number	Salary (Per Month)	Total (Rs. Lakh/year)
1	Plant manager	1	15000	1.8
2	Manager – Technical	1	15000	1.8
3	Worker	3	10000	3.6
4	Accountant	1	15000	1.8
	Total			9
Other Costs				
S. No.	Cost Head	Annual Cost(INR)		
1	Administrative Costs	50000		
2	Utility Costs	50000		
3	Marketing and advertising	50000		
4	Land Rent	120000		

Source: MP Ensystems Research

Means of Finance

Financing to food processing falls under priority sector lending. The loans to units meeting the criteria of MSME are classified under MSME sector. Such units can be financed by any Scheduled Commercial Banks, Regional Rural Banks and Cooperative Banks. Important terms and conditions of financing such units are discussed in this section.

Table 5: Means of Financing

Means of Finance		
Total Financing required	INR lakhs	26.745

Equity	%	10%
Grant	%	35%
Debt	%	55%
Interest Rate (Per Annum)	%	12.00%
Moratorium	Years	1
Annual Installment	Years	9
Equity Component	INR lakhs	2.6745
Grant Component	INR lakhs	9.36075
Debt Component	INR lakhs	14.70975

Source: MP Ensystems Research

Financial indicators are analyzed by discounting cash flow @10% discounting rate in **Annexure II** and the summary is presented in **Table 6**.

Table: 6 Estimated Financial Indicators

Financial Indicators	Estimated	Requirement
Net Present Worth	51.16	Should be +ve
IRR	45%	> 10%
BCR	1.09	Should be >1.0
DSCR	4.1	Should be >1.5

Source: MP Ensystems Research

The repayment period has been drawn by considering net surplus available for repayment. The bank loan with interest is repayable within 9 years with a moratorium of one year. The debt service coverage ratio based on assumed techno economic parameters is found satisfactory.

Annexure I: Catalogue of processed products

Types of processed Products	Proportion in sales	Selling Price (Rs/kg)	Packaging Cost (INR/kg)
Processed Crush	100%	150	1
Wastage of millets during processing	%	20%	
Rate of Strawberry	INR/kg	95	
Weighted average cost of packing	INR/kg	1	

Annexure II: Calculation of financial indicators

[illegible]