

Project Design Document: Greening of rural value chains for cleaning and grading unit

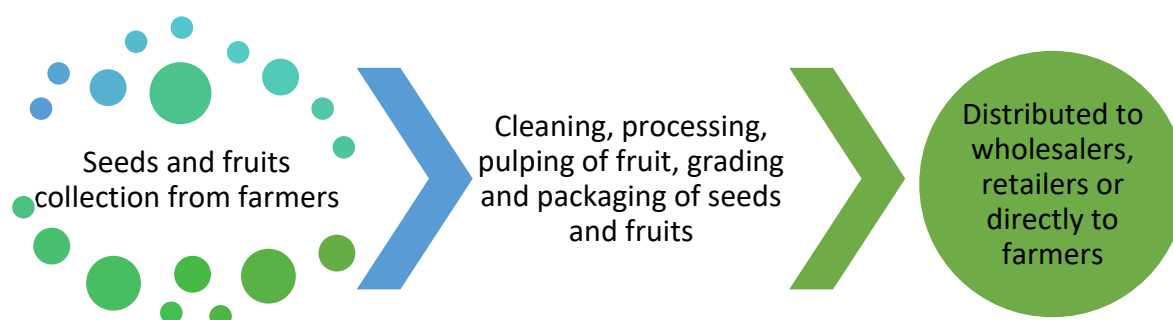
Project background

Prabhupaad Farmers Producer Company Limited is a 1244-member farmer-producer organisation (FPO) incorporated in 2019. The details of FPO are mentioned below.

Table 1 Details of FPO

Name of FPO	Prabhupaad Farmers Producer Company Limited
Address	At Sakat, Shirdhone District: Ahmednagar, Maharashtra, India - 414001.
Activity	Trading of agricultural produce
Propose activity	Cleaning and grading unit
Capacity of unit	3 TPH
Produce	All grains, custard apple, guava, mango
Number of operational days	150
Connected load (kW)	64

The raw material is sourced from the member and non-member farmers of FPO in the region. The value chain is as follows:



However, the processing unit will face challenges of high operation costs, a major component of which is electricity cost. This issue will result in low profitability of the unit.

Project description

This project aims at the solarisation of unit by installing solar PV. The specifications of the proposed solar PV system and annual savings are as follows,

Table 2 Details of solar PV system

Solar photovoltaic panel system	72.64 kW
Annual mitigation of CO ₂	83.78-ton CO ₂ per year
Average savings on annual electricity unit consumption	1352472 units
Average saving on annual electricity bill	INR 106051

*Assumption:

1. Saving per unit electricity consumption INR 10 per KWh
2. Average power generation per KWp= 4 kWh/KWp/day

3. Average daily working of unit = 7 hours

Summary of investments

Total project cost is expected to be close to INR 39.95 lakhs that includes design, engineering, procurement, and installation. Per kW cost of solar PV is considered 50,000 Rs/kW with EE measures of INR 5000 per kW is considered.

Table 3 Capital Costs for the project

S · N o	Technology	Un it	Capacit y	Qty (Nos)	Cost (Rs/unit)	Value (Rs.)	Cost sharing			Sharing (%)	Relevan t scheme s
							FPO equity **	Govt subsid y	Loan		
1	Project Cost*										
	Solar photovoltaic panel system with battery	k W	72.6375	1	36,31,875	36,31,875	7,26,375	0	29,05,500		
	Energy-efficient measures			1	3,63,188	3,63,188	72,638		2,90,550		
	Total				39,95,063	39,95,063	7,99,013	0	31,96,050	20::0::80	

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

**Based on discussions held on the ground and their financial conditions, equity share ranges from 5% to 30%, hence has been assumed at 20%

Financial analysis

A simple cash-flow analysis is below, with the conservative assumption that the equipment has a lifespan of 20 years.

Project cost

The project cost of 39.95 lakh includes solar panel equipment cost and installation cost, other components of project cost are taken as zero as the plant is already proposed.

Means of finance

Regarding the implementation of solar rooftop installations for industrial consumers, no subsidies are accessible for this initiative. Consequently, the funding for the project will be undertaken by the FPO. The financial arrangement for this venture entails a 20% equity investment from the FPO and the remaining 80% through a loan arrangement. Additional specifics concerning the financing breakdown can be referenced in Table 5.

Table 4 Means of Financing

Means of Finance		
Total Financing required	INR lakhs	39.95
Equity	%	20%

Grant	%	0%
Debt	%	80%
Interest Rate (Per Annum)	%	12.00%
Moratorium	Years	1
Annual Instalment	Years	5
Equity Component	INR lakhs	7.99
Grant Component	INR lakhs	0
Debt Component	INR lakhs	21.96

Source: MP Ensystems Research

The financial indicators analysed by discounting cash flow at 10% and the summary is presented in **Table 5**.

Table 5 Estimated Financial Indicators

Financial Indicators	Estimated	Requirement
Net Present Worth	58.71	Should be positive
IRR	39%	> 10%
BCR	2.8	Should be >1.0
Payback period	5.1 years	

Source: MP Ensystems Research

The bank loan with interest is repayable within 5 years with a moratorium of one year.

The following specific attributes of ESG can further be achieved through the implementation of this project:

- There are a number of environmental opportunities including mitigation of carbon emissions, reduction of resource depletion. There are direct climate benefits to the project. The installation of roof-top solar results in the mitigation of 83.78 tonnes of CO₂ emissions every year.