

[illegible]

1	Project Cost*				950,000	950,000	1,90,000	0	760,000	20::0::80	
	Solar photovoltaic panel system with battery	kW	19	1	950,000	950,000	1,90,000	0	760,000		
	Energy efficient measures			1	95,000	95,000	19,000		76,000		
	Total					10,45,000	2,09,000	0	8,36,000		

*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 25%, hence has been assumed at 20%

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 distribution of the profits as dividend at a later stage. It aims to achieve these targets through a low-carbon pathway, which would further improve its sustainability in the long run and doesn't add to the widespread land and air pollution through its operations. The key barrier addressed through the proposed project implementation is listed below.

Table 2: Barriers addressed through the project

Barrier	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

Source: MP Ensystems Research

Financial analysis

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

Project cost

Project cost includes solar panel equipment cost and installation cost, other components of project cost are taken as zero as the plant is already installed and operational.

Table 3: Total Project Cost

Project Cost					
S. No.	Particulars	Unit	Qty.	Rate (Rs.)	Amount (Rs. Lakh)
1	Solar photovoltaic	kW	19	950,000	9.5

2	Energy efficiency measures		95,000	0.95
	Total			10.45

Source: MP Ensystems Research

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 5: Means of Financing

Means of Finance		
Total Financing required	INR lakhs	10.45
Equity	%	20%
Grant	%	0%
Debt	%	80%
Interest Rate (Per Annum)	%	12.00%
Moratorium	Years	1
Annual Instalment	Years	5
Equity Component	INR lakhs	2,09,000
Grant Component	INR lakhs	0
Debt Component	INR lakhs	8,36,000

Source: MP Ensystems Research

The financial indicators analysed by discounting cash flow at 10% are given in **Annexure I** and the summary is presented in **Table 6**.

Table: 6 Estimated Financial Indicators

Financial Indicators	Estimated	Requirement
Net Present Worth	23.26	Should be positive
IRR	83%	> 10%
BCR	4.2	Should be >1.0

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 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 25 tonnes of CO₂ emissions every year.

Annexure I: Calculation of financial indicators

Detailed calculation and cash flow											
Year s	Electricity cost saving			Tax Saving			Total savin g	O&M charg es	Annual loan repaym ent	Net cash flow	Cummulati ve saving
	Electricit y generati on per annum	Electricit y tariff	Savings on Electrici ty	Gros s asset valu e	Accelerate d depreciati on	Tax saving due to AD					
	(KWh)	(INR/KW h)	(INR Lakhs)	(INR Lakh s)	(INR Lakhs)	(INR lakhs)					
	A	B	C=A*B	D	E=D*40%	F=E*30 %					
0	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-2.09	-2.09
1	31207.50	10.00	3.12	10.45	4.18	1.25	4.37	0.10	-2.32	1.95	-0.14
2	31051.46	10.30	3.20	6.27	2.51	0.75	3.95	0.11	-2.32	1.52	1.38
3	30896.21	10.61	3.28	3.76	1.50	0.45	3.73	0.13	-2.32	1.28	2.66
4	30741.72	10.93	3.36	2.26	0.90	0.27	3.63	0.14	-2.32	1.17	3.83
5	30588.02	11.26	3.44	1.35	0.54	0.16	3.61	0.15	-2.32	1.13	4.97
6	30435.08	11.59	3.53	0.81	0.33	0.10	3.63	0.17	0.00	3.46	8.42
7	30282.90	11.94	3.62	0.49	0.20	0.06	3.67	0.19	0.00	3.49	11.91
8	30131.49	12.30	3.71	0.29	0.12	0.04	3.74	0.20	0.00	3.54	15.45
9	29980.83	12.67	3.80	0.18	0.07	0.02	3.82	0.22	0.00	3.59	19.05
10	29830.92	13.05	3.89	0.11	0.04	0.01	3.90	0.25	0.00	3.66	22.70
11	29681.77	13.44	3.99	0.06	0.03	0.01	4.00	0.27	0.00	3.73	26.43
12	29533.36	13.84	4.09	0.04	0.02	0.00	4.09	0.30	0.00	3.79	30.22
13	29385.69	14.26	4.19	0.02	0.01	0.00	4.19	0.33	0.00	3.86	34.09
14	29238.77	14.69	4.29	0.01	0.01	0.00	4.30	0.36	0.00	3.93	38.02
15	29092.57	15.13	4.40	0.01	0.00	0.00	4.40	0.40	0.00	4.00	42.03
16	28947.11	15.58	4.51	0.00	0.00	0.00	4.51	0.44	0.00	4.07	46.10
17	28802.37	16.05	4.62	0.00	0.00	0.00	4.62	0.48	0.00	4.14	50.24
18	28658.36	16.53	4.74	0.00	0.00	0.00	4.74	0.53	0.00	4.21	54.45
19	28515.07	17.02	4.85	0.00	0.00	0.00	4.85	0.58	0.00	4.27	58.73
20	28372.49	17.54	4.98	0.00	0.00	0.00	4.98	0.64	0.00	4.34	63.06
Total							82.73	5.99	-11.60	63.06	531.52

Cummulative savings (INR lakhs)	531.52
Net present worth (INR lakhs)	₹ 23.26

Internal Rate of Return (IRR)	83%
BCR	4.2

Solar PV Cash flow

