

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

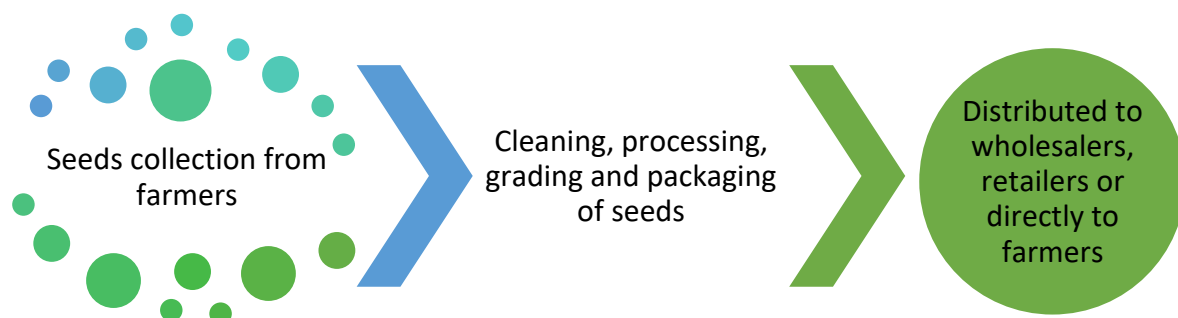
Project background

Neves Farmers Producer Company Limited is a 350-member farmer-producer organisation (FPO) incorporated in 2021. The details of FPO are mentioned below.

Table 1 Details of FPO

| | |
|----------------------------|---|
| Name of FPO | Neves Farmers Producer Company Limited |
| Address | At Sakali, Tal: Yawal District: Jalgaon, Maharashtra, India - 425302. |
| Activity | Trading of agricultural produce |
| Propose activity | Cleaning and grading unit |
| Capacity of unit | 4 TPH |
| Produce | Wheat, Jawar, Bajara |
| Number of operational days | 150 |
| Connected load | 55 |

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 | 49.17 kW |
| Annual mitigation of CO2 | 56.71-ton CO2 per year |
| Average savings on annual electricity unit consumption | 71788 units |
| Average saving on annual electricity bill | INR 915519 |

*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 = 8 hours

Summary of investments

Total project cost is expected to be close to INR 27.04 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. No | Technology | Unit | Capacity | Qty (Nos.) | Cost (Rs/unit) | Value (Rs.) | Cost sharing | | | Sharing (%) | Relevant schemes |
|-------|--|------|----------|------------|----------------|-------------|---------------|--------------|-----------|-------------|------------------|
| | | | | | | | FPO equity ** | Govt subsidy | Loan | | |
| 1 | Project Cost* | | | | | | | | | | |
| | Solar photovoltaic panel system with battery | kW | 49.17 | 1 | 24,58,500 | 24,58,500 | 4,91,700 | 0 | 19,66,800 | | |
| | Energy-efficient measures | | | 1 | 2,45,850 | 2,45,850 | 49,170 | | 1,96,680 | | |
| | Total | | | | 27,04,350 | 27,04,350 | 5,40,870 | 0 | 21,63,480 | 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 27.04 lakh includes solar panel equipment cost and installation cost, other components of the 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 | 27.04 |
| Equity | % | 20% |
| Grant | % | 0% |

| | | |
|----------------------------------|-----------|-----------|
| Debt | % | 80% |
| Interest Rate (Per Annum) | % | 12.00% |
| Moratorium | Years | 1 |
| Annual Instalment | Years | 5 |
| Equity Component | INR lakhs | 5,40,870 |
| Grant Component | INR lakhs | 0 |
| Debt Component | INR lakhs | 21,63,480 |

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 | 39.74 | 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 56.71 tonnes of CO₂ emissions every year.