



Punjab Renewable Energy Systems Pvt. Ltd

Innovative Value Chain of Biomass Aggregation, Processing and Supply for Sustainability of Power Plant & Bio-refinery Projects

CASE STUDY

Biomass Supply Chain Mechanism (Cotton Stalk)



Step 1: Uprooting of Cotton stalk from Farm Field
Per 3 Acre : 10 Jobs per Day X 180 Days (Harvest Season) = 1800 ManDays

Step 2: Processing/ Shredding of Cotton Stalk per Shredder : 6 Jobs X 180 Days = 1080 ManDays

Step 3: Transportation & Storage to Storage Center / Plant Per Tractor trolley: 8 Jobs X 180 Days = 1440 Mandays

Total Mandays : 4320 Mandays Per Unit Shredder (For 13 MW Biomass Based Plant, Maharashtra)

Average Job Created due to Biomass (Cotton Stalk) SCM Mechanism For Biomass Based Plant having 120 Shredders = (Number Of Shredders X Total Mandays) / 365 Days
= (120 X 4320) / 365
= **1421 Green Jobs/Day**

Summary

Biomass based power generation is renewable, widely available, carbon-neutral technology and has the potential to provide significant employment and income generation in the rural community particularly farmers and villagers. The cumulative capacity of biomass power generation in the country is about 1263.80 MW out of which only about 50% is operating and rest is either shut down or operating at low plant load factor.



The major reason for non-performance of installed biomass power plants is unavailability of required quantity of biomass at reasonable cost. This is due to lack of proper fuel supply logistic chain and presence of cartel of traders/ middlemen forcing the biomass price to go higher artificially.

(PRESPL) was established in March, 2011 with a view point of addressing this principal issue of biomass fuel supply management and looks into aggregation, processing, transportation, and supply to biomass based power plants and process plants having boilers.

Objective of Intervention

To achieve biomass fuel security for biomass power plant through establishing an independent fuel supply chain starting from fields to the boiler inlet involving farmers, local labour, and staff for supervision and control of complete fuel logistic chains.

Type of Intervention and Location

Supply of cotton stalks to an operating 13.0 MW biomass based power plant in Aurangabad, Maharashtra

Description of Intervention

In order to develop biomass supply chain to power plants, identification and training of rural youth is done to develop them as “Village Level Entrepreneurs” (VLEs). VLEs are provided with necessary machinery such as shredder, balers etc. and are given responsibility of collecting biomass from individual farmers, processing and transporting to power plant. VLEs are paid at pre-determined rates for biomass supplied to the plant. VLEs will be strategically located across the catchment area so as to get the complete reach in the potential areas targeted.

The typical flow diagram of biomass supply chain management involving farmers and village level entrepreneurs (VLEs) is shown below.



Figure 1: Flow Diagram of Biomass Supply Chain Management [2]

Intangible or Tangible Benefit

- Annual income generation potential of about USD 3.3 million due to biomass logistics operations
- RESPL is providing additional source of revenue to the farmers through sale of the feedstock which otherwise used to be burnt/ left in open fields leading to deadly particulate and methane emissions. Farmers are happy to get additional source of income from selling crop residues. This additional



income helps farmers to purchase seeds, fertilizers etc. For next crop as well as improving their lifestyle and expenditure on health and education.

- For collection, storage and supply of biomass, many tractors, trolleys and other farming equipment's are also involved by the local farmers which results in additional use and source of income to the local Farmers.
- Rural income and employment generation to whole rural chain involving VLEs, farmers and rural youth. In fact, many unemployed rural youth find employment opportunity either as Village Level Entrepreneur or unskilled labour involved with biomass harvesting, processing, storage and transportation. This leads to creation of skilled and semi-skilled manpower in rural India with 'OJT-On the Job Training'.

About PRESPL

Punjab Renewable Energy Systems Private Limited (PRESPL), was established in March, 2011 with a view point of addressing principal issue of biomass fuel supply management and PRESPL looks into agri-residue biomass aggregation, processing, transportation, storage and supply to biomass based power plants and process plants having boilers all across the globe. PRESPL enters into long term fuel supply agreement with clients with pre-decided price and schedule of supply and guarantying quantity and quality of biomass fuel supply.

PRESPL is providing impetus to rural economy by creating additional source of revenue to about 20,000 farmers through sale of the agri-residue feedstock which otherwise used to be burnt/ left in open fields leading to harmful particulate and methane emissions.