

Chapter 1: Executive Summary

1.1. Promoter's interest in power generation

Promoters are engaged in energy intensive businesses of cement manufacturing. Barak valley Cements Ltd. (BVCL) has expanded its manufacturing capacity from 300 TPD to 460 TPD and planning to go up to 600 TPD by 2006. This company presently needs about 3 MW power for its operations. There shall be an incremental demand of 3 MW.

BVCL is presently drawing the required power from Assam State Electricity Board (ASEB). They are facing following problems in the supply:

- **Maximum demand limitation,** there is a change over in power source for the motors twice per day on this account. This leads to the variation in the quality of the material produced during that duration.
- **Quality of power is not good.** There are high variations in voltage and frequency.
- **Frequent failure of the supply** (Average 1 % of the total available hours in a month)
This leads to the stoppage of the entire plant. All critical motors also get stopped. There is a major impact on the quality of the material produced in this duration.

Considering the problems mentioned in the ASEB supply, it seems unlikely that the plant can be operated on ASEB, especially with the enhancement in the capacity. Additionally there shall be an improvement in the quality of the material produced with a consistent power supply source.

As per the assessment study carried out, the cost of power generated from biomass-based power plants would be less competitive against coal-based power plants. This would however enable multiple benefits to the promoters in terms of increased power availability and benefit of using green power for the promoter's and partner's manufacturing processes thereby improving competitiveness of the products in the international market place. It is proposed to explore additional financial benefit from carbon trading under CDM of Kyoto Protocol.

1.2. Biomass power project in Assam

Assam State provides attractive investment opportunity in setting up biomass based power projects due to the following reasons:

1. Abundant availability of Rice Straw/Rice Husk, which presently does not have much of commercial use.
2. Very progressive State policy for encouraging renewable energy development

1.3. Project location, availability of biomass and plant capacity

- In the State, the staple food is rice and the major crop is paddy.
- The plant is proposed to be located in Dist. Karimganj, which is one of the well-developed paddy growing area in the State. The Rice Straw/Rice Husk available from these regions is approximately 70200 MT per annum, which can support 6 MW power generation capacity.
- The site is located downstream of river Barak, which is approximately 1.5 km from the project site. The river will act as the perennial source of water throughout the year.
- The nearest railway station is only around 2.5 km away. Rail transportation can also be used for Rice Straw/Rice Husk, if required.
- Plant is designed for power generation of 6.0 MW.

1.4. Technology configuration

Technology configurations have been evolved based on:

- DSCL database and experience in setting up, and providing O&M support for captive power plants on different fuels including biomass and coal.
- Survey of literature on international experiences in biomass fired power plants and interaction with reputed boiler makers and some of the operators of such plants
- Optimization considering benefit of high pressure and temperature on efficiency and maintenance factors. Accordingly, Following configurations have been chosen
 - One AFBC boiler of 32 TPH capacity, at pressure of 45-kg/cm² and 430°C temperature operating on Rice Straw/Rice Husk/Coal.
 - One Extraction condensing steam turbine generator of 6.0 MW.

1.5 Project cost

Project cost has been worked out after obtaining offers for major equipment. Various assumptions like interest rate, means of finance have been taken as per the standards provided by BEPL. Overall cost of the project has been worked out at Rs 21.6 Crs.

1.6 Project financials

At projected fuel cost at Rs. 900 per MT, the cost of power generation for the first year comes at 2.43 Rs./ kWh and the average cost for power generation for 10 years comes at 2.16 Rs./ kWh. Also considering increase in Rice Straw/Rice Husk price at Rs.1100/MT, the average cost of power generation comes at Rs. 2.46/ kWh. The proposed registration under CDM of the project will bring down the cost by about Rs. 0.50/ kWh. This would help in improving the financial viability further.

1.7 Project risk and mitigation

Followings are the major risks associated with the projects have been identified and analyzed along with other minor risks.

1. Power off take risk - Adequately covered as power shall be exported to a group company.
2. Fuel risk - Rice Straw/Rice Husk availability in 50 KM radius is sufficient to meet capacity of 10 MW. Additionally the plant can have the following mitigation strategies

1.8 Project implementation

Financial closure has been targeted for August 2005 and project commissioning by March 2006.

The power project would be implemented on packaged basis to keep the cost low. Three main packages comprising of boiler, TG set and the balance of plant would be separately handled. Engineering co-ordination and monitoring at all stages from designing to commissioning would be carried out by expert consultants having wide experience in setting up and operating such plants.

1.9 Project Registration under Clean Development Mechanism

It is proposed to register the project under Clean Development Mechanism of UNFCCC. At the prevailing prices of carbon for CDM projects, it has been estimated that there would be favorable impact of Rs 0.50-0.70/KWh on cost of electricity generated. This benefit would be available for at least 10 yrs.

1.10 Operation and maintenance

Critical requirement has been assessed and planning for the same has been taken up simultaneously with project planning