



Bio Energy Association of Sri Lanka

**2010
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GREEN ENERGY



2ND POWER & INTERNATIONAL EXPO EXHIBITION

BEASL took part in the 2nd Power Sri Lanka 2010 International Expo-exhibition from 3rd to 5th June held at the Sri Lanka Exhibition and Convention Centre.

Well over 2500 local and foreign visitors participated at the exhibition. The exhibition was jointly organized by CEMS Global, CEMS USA and CEMS India. They are well known for organizing trade fairs for over 18 years.

The theme of the exhibition was Power Generation, Energy, and Renewables. BEASL was invited to attend based on the track record of work done in these areas.

BEASL stall displayed the activities we are engaged in and the banners displayed the following:

- θ Gliricidia Cultivation
- θ Biomass fired boilers
- θ Biomass fired boilers
- θ Thermic Fluid Heaters
- θ Gasifier replacing fossil fuels in the industry.
- θ Dendro power in electricity generation.





4MW Biomass Electricity Generation Project Of United Dendro Energy (Pvt) Ltd.

1.0 Project overview

M/s United Dendro Energy Pvt Ltd, has been set up to operate a renewable energy project of 4 MW of electricity to be supplied to the national grid using biomass as fuel. The company has already secured approvals from relevant authorities and a suitable site of 10 acres with good access to the grid on long term lease basis. This project is going to be the first in the country which supplies energy at 4MW to the national grid using biomass.

1.1 Raw material

The main raw material which is biomass wood chips is to purchase from out growers, four plantation companies and from company own bio fuel plantation. The annual biomass requirement is estimated as 57,600MT or 180MT average per day. The company has already identified three plantation companies to supply the bio mass & the company is in the process of securing land mass of 4000 acres in Monaragala, Koslanda and Haldalmulla area to set up its own plantations to reduce the risk of dependency on the external supply and out growers.

1.2 Operations

The plant is situated at a 10 acre land in Dodangoda, Kaluthara, Sri Lanka. The site is located within 1km to the 2nd exit point of the newly built southern highway, and is leased out to the project by the government on 30 year scheme starting 2006 at a cost of Rs. 360,000.00 per annum for 10 acres.

Investment US \$ Mn 6

Biomass MT/annum 57,600

Electricity MW 4.0

Carbon credits MT CO2 12,000

Date of completion Dec 2011

This figure is confirmed by the independent consultant appointed by DFCC bank.

1.3 Out put

2.0 MW of electricity will be produced and will be sold to Ceylon Electricity Board @ Rs18.56 per unit and 15% will be required for the internal plant equipment. The rate is the highest offered by CEB for this activity in the country.

The company is also in the process of registering itself for Carbon trading.

3.0 Time frame of investment

As per the signed PPA with CEB, project should commence its commercial operation on or before December 2011.

4.0 Management of the project

A Malaysian based project manager/consultant has been identified by the developers to set up the project. The project manager has over 32 years of experience in biomass, installing end to end plants in Malaysia, Thailand, Cambodia, Africa and South America. The project manager will be assigned to design the plant and help the company in the procurement through his knowledge in the field to source the best suitable equipment. Once the project is commissioned, the project manager will run the plant for a period of time in order to train the in house technical team.

5.0 Approvals

Approval type	Date granted	Time period
Land release from Land Commissioner	13 th January 2009	30 years
Central Environmental Authority (CEA)	01 st June 2007	
Forestry Department	24 th January 2007	
Pradeshiya Saba	22 nd August 2007	
Divisional Secretariat Dadangoda	21 st August 2008	
LOI	01 st August 2007	
SSE A	27 th January 2009	
Energy Permit	01 st September 2009	
PPA – Fixed Rate at Rs. 18.56	22 nd December 2009	22 Years

Annual General Meeting 2009

The AGM of the Bio Energy Association of Sri Lanka was held on 22nd December 2010 at the '80 Club' in Torrington Square, Colombo 07. It was attended by over 80 participants and the chief guest was the Hon. Minister Champikka Ranawaka. In his address, he stresses the importance of alternative energy to meet to energy demand of the country. The President presented the annual report and the Treasurer tabled the annual account. These were adopted and the new council was elected. The following office bearers were elected at the AGM:

L.P. Jayasinghe – President
 P.G. Joseph – Vice President
 G. Kulatunga – Honorary Secretary
 N. Nagasinghe – Honorary Treasurer

Council Members

H. Karunanayake, A. Abegunewardena, Cpt. Nalin de Silva, Lalith Senevirathne, Indika Gallege, Gamini Ranasinghe, Prof. Athalage, Cpt. Nalaka Gunasinghe, Sarath Senevirathne, J.B. Munasinghe.

The AGM was followed by dinner hosted by the BEASL.



Wellcome address by President



Presentation done by Dr. (Mrs) Lalani Samarappuli.

EnerFab Private Limited



BEASL

EnerFab is an energy saving company in the field of renewable energy of Sri Lanka. It is the pioneer in the field of turn key companies of the fossil fuel based thermal energy facilities to biomass.

EnerFab manufacture Gasifiers locally to match the customer demands where as import from India when it is large scale once as required by the customer. Other than production and supply machineries EnerFab takes the case as a total project and establishes the plant at customers and if necessary undertake the operation and maintenance part as well. In the process a customer switching their existing facility to biomass the main concern usually arises is guarantee for the fuel wood supply. EnerFab takes the burden on behalf of the customer and the part of fuel wood supply part takes with guaranteed fuel.

To meet the demand made by the customers EnerFab maintains own fuel wood collection stations and process wood and supply to it's customers as required. It seems to be competitors are coming into the fuel wood market and makes a completion foe fuel wood in some locality. This sign made EnerFab to invest on their own plantations to meet the partial demand of fuel wood from their plantations. As a start in August 2008 EnerFab started it's 1st energy plantation in Moragahawewa, Nawagattegama in Puttalam District.



Selection of an area suitable for planting

The plantation was established in Moragahawewa in Nawagattegama Electorate in Putlam District. This location was found on an archeological site seen tour through Moragahawewa. The land was a property vested by Erunukkuliya Rajamaha Viharaya, from Vihara ancestry. The land was fallowed early after done chena cultivation by village farmers.



Through the land there is a gravel road maintained by the pradeshiya Sabha which is leads to Nanneriya a small junction on Galgamuwa Nawagattegama Road. This road divides the land into two parts smaller to east and larger to west.

Boundary survey required a passage

Manual clearing was done for boundary survey as it required a passage visible through before start surveying to get readings.

Surveying the land to be cleared

A land survey has been done using modern equipments by an authorized surveyor alone the passage cleared manually by farmers with some corrections where direct line is disturbed with debris left hanging. Using the finished survey plan it helped a lot to arrangement of bocks, determining the extent cleared, making estimations of man days required to finish land clearing and other land preparation activities.

Land clearing [Manual clearing]

Half of the land cleared manually with farmers as it was the most environment friendly manner of clearing which saves soil structure and topsoil with organic matter. Though when burning massive amount of leaf liter burned away but remains considerable amount of organic matter which helps for fantastic growth for newly planted things.

Initially hired labourers to hacking down bushes as it becomes to thick, continuous mulch covers the whole soil surface with out opening and left dry well to burn well.

Lasarting was last up to the end of September by the time some burning sessions were carried out interm ittently where chopped once desiccated enough. All the barricades enter to the land finished with all stuff burnt as dry zone dominant with thorny bushes. Some bushes are very hardy and difficult to cut with even their sharpen knives or some are bearing fine thorns.

Mechanized clearing

Poor labour availability is a problem mostly in the area with the start of the season as all are busy with their lands to grow foods. In such instance alternative means of land preparation used. Track loader which was used a lot at the site and start clearing with a trained operator but not for land clearing. The extent cleared per day with the machine was higher than manual clearing and less remained for burning everywhere but remains scattered sharp thorns harmful to workers and reduces the efficiency of labour. Cleared bushes are heaped as strips and set fire after desiccated them.

The major disadvantage of this kind of clearing is compressing the soil surface which adversely retard the growth of energy plants and other cash crops than manual clearing. Machine clearing sometimes removes topsoil witch is utmost important part of the soil though an experienced operator can manage clearing with lease damages to the top soil.

Nursery site

In parallel to the land clearing the nursery site preparation was done at the pond as to ease irrigation practices. The area selected was a shade with bigger trees and lower level bushes, other vines and herbs.

Arrangement of planting blocks

Bare soil need to be separated in to blocks to ease all management after with energy trees grown well. From planting to harvesting there are many transportation needs that are mandatory for large plantations. Also it is beneficial heavy vehicles to move only alone roads marked even before planting as this avoid compression of new soil in good condition. Seed stick supply to the planting point is daily necessity and it is impossible done manually as nursery to be placed little away to match it's requirements when it establishes dry season.

Removing roots of large trees and stones

Before planting started a stumps of large bushes were removed with the help of track loader with the intension of after harvesting energy plants a cash crop to be sawn before next canopy closure. Other stumps of smaller bushed cut off by workers using axe and other knives.

Planting gliricidia

Planting rooted stumps were started with the first rain and planting done in holes made by flat end of the crowbar. Spacings were 3 feet or one meter within the row and asace between two consecutive rows were 5 feet to allow short term cash crops to be allowed. Some intermittent rainfall received to the area and some dryness was also experienced. Sticks initilally planted were well established when weather experiencing little dry. Enyhow managed to planting around 20 acres by end of December.

Fencing

The area is very much famous for wild elephant attacks and in the plantation we cultivated short term cash crops and cassava which is very much attractive to wild elephants. We erected elephant preventing fence powered by solar system and which help a lot to protect the crops raised.

Planting Maze and other vegetables

In the same time planting sticks were established many oytter vegetable and short term vegetables plantatde in between rows of Gliricidia. Zea Maze, Pumpkin, Water melon, Sesami, Thibbatu and Cassava was the vegetable cultivated and good results were obtained.



by Piyasiri Gunasekara.
Member BEASL.



VISION FOR FUTURE ENERGY (2010)

Ministry of Power & Energy

Sri Lanka is about to take a giant stride towards the achievement of the status of MARVEL OF ASIA as envisaged by the Mahinda Chintanaya – THE VISION FOR 2010 in the backdrop of newly earned peace. Under his vision Sri Lanka is expected to be transformed into the Asia's centre for navigation, aviation, commerce, energy and knowledge.

In this context energy assumes a dominant role. The country must be self sufficient in energy which needs to be supplied without interruption. Accordingly the National Energy Policy will focus on three aspects.

- i. Energy
- ii. Economy
- iii. Environment

These three aspects comprising the concept of Triple E form the corner stones of the Policy.

Based on these principles plans will be prepared covering the entire power sector and the economy of the country. These plans will be prepared based on Short term (six month), Medium term (five year planning horizon 2011-16), and Long term (2010-30) basis. The strategies and active programs will also be formulated and supplemented in respect of long term and medium term plans.

1. "Electricity For All by 2012"

Under this programme, Transmission and Distribution Network will be expanded to cover the entire country by 2012 in order to provide electricity to all rural households. This would be achieved by constructing 4593 new Rural Electrification schemes during the next 2 years.

2. Relief Scheme

A scheme will be implemented within a month to assist those who cannot afford the initial cost of electricity service connection, by providing loans through rural banks such as "Sanasa", "Samurधि" and others.

3. Rural Energy Programme

By 2012, all rural households, which cannot be economically connected to the National Grid, will be provided alternative electrical energy sources.

4. "Express" Consumer Service

"Call Centers" will be established to receive consumer complaints and to attend to these complaints promptly.

5. "JANA BALAYA Programme

Consumer Societies will be established to safeguard their rights. An Island-wide network of Consumer Societies will be created within the next two years.

6. Appropriate and People Friendly Tariff

A new Tariff will be introduced that will focus on energy conservation and affordability to low-income consumers in consultation with the Public Utilities Commission of Sri Lanka.

7. Towards a Customer Oriented Work Force through Human Resource Development

8. Income Generation from Idle Assets.

9. Renewable Energy Development

Priority will be given to the utilization of all renewable energy sources of the country to generate energy. Long Term Generation Plan will be prepared to incorporate this aspect. Active participation of the Private Sector will be encouraged to establish renewable energy power plants.

10. Local Expertise for Power Sector Development

11. Popularization of Energy Efficient Bulbs

12. Dendro Power

Transmission and distribution losses can be reduced by having embedded generation on a de-centralized basis. By development of de-centralized dendro power plants, farmers can derive an additional income and CEB can purchase low cost energy. Residual heat from such power plants could also be used in small and medium scale industries. An integrated programme will be launched to meet these objectives.

13. SMART Grid Concept

All domestic consumers will be allowed to generate electricity through solar energy and all other sources of renewable energy within their household block of land and feed the distribution network on "smart metering" basis.

14. Towards a Sustainable Clean Energy Society

A programme of action to evolve a sustainable clean energy society will be launched. The theme of this programme will be "Sustainable Urbanization".

Industrial uses of Banana crop

Banana is one of the most important fruit crops and it is widely grown in Sri Lanka. It is grown on commercial scale as well as in home gardens. Generally after harvesting the fruit the rest of the plant is not used. Disposed Banana plants contain cellulosic fibre having good strength.

Extraction of fibre;

After harvesting, pseudo – stem leaving out corm [underground stem] and leaves is used for extraction of fibre. It is cut into portions of about 60 cm in length. Outer sheaths are removed and inner sheaths are used for extraction of fibre. It is done by fibre extraction. Fibre so extracted is air dried for about five hours. Yield of fibre is about 5% by weight of banana sheath.

Strategy :

Harvesting period of Banana is about 12 months. Once mother plant is harvested and removed, the suckers in turn would grow. In a commercial cultivation, there is hardly any problem of obtaining the raw materials. But in areas where banana is grown in home gardens, collectors have to be employed for getting raw materials to a central place.

Uses of Banana fibre, Leaf & Sheath:

Some main items manufactured as cottage industry are baskets, boxes, hand bags, flower vase, rope and paper etc. Apart from pseudo stem, other plant parts too could be used to manufacture industrial products.

Leaf blade after steaming is used as meal wrapper [replacing polythene]. Steamed leaf blade could be used for inner lining of Tea – chests. Other items manufactured are dessert cups and plates. Leaf sheath could be used to produce table clothes and wall pictures.

Social benefits:

1. All the products are bio-degradable, hence environmentally friendly.
2. As stems and leaves are not disposed along road side, it plays an indirect role of solid waste management.
3. Provides additional income to growers [apart from selling fruit].
4. It generates rural employment and up – liftment of their social status.

Conclusion:

Thus it is seen, like coconut, all the parts of banana could be used. There are multiple uses of Banana. But people are not aware of these uses. The technology should be provided. Market potential is available and at present supply is less than the demand for above products.

by L.L.Y Abeytunga.
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