Waste Wood Energy for heat and electricity in southern highlands of Tanzania 5th November 2012

Launch an operation for leasing/renting Wood Chippers to rural entrepreneurs for converting waste wood from large forest plantations and small holder forestry operations into wood-chips for sale to energy plants.

Summary

The southern highlands of Tanzania have growing acreage of planted exotic trees that are grown for timber. The trees are planted by large plantations but more so now by small holders who grow the trees for cash on their own small plots. Processing the trees to timber results in large amounts of waste wood that is not used. The opportunity here is to convert this wood into chips that are then used to produce electricity for industrial purposes or for the grid, and heat for processing. A first trial run has shown the viability of the chipping technology and its economical operations. However, the market for chips is as yet not well enough organized to warrant large scale investments into wood-chipping itself. Small plants must be explored that will convert wood-chips into electricity and heat for local use and the grid, eg. tea factories etc. The potential of waste wood is enormous, while at the same time the grid desperately needs more electricity.

Situation at present

1. In the southern highlands of Tanzania large pine and eucalyptus plantations exist. Also, over the last 10-15 years small holders have also planted a lot of trees. These trees are harvested for timber and the forests then replanted.

2. The processing of trees into timber results in large amounts of wood that is left as waste, eg. branches and tree-tops, cut-offs, sawdust, etc. This waste is left to rot or is burned to clear the land for replanting. These fires are very hazardous.
3. Large steam turbines are operating in the paper mill at Mgololo and further large turbines are planned to come online near Mafinga. They produce electricity for industrial purposes and for the grid.
4. The business opportunity at present is to process all the unused waste-wood into transportable chips and sell it to the large steam turbines who convert the chips into electricity for the grid.

5. A first effort supported by the Swiss government through its REPIC program has imported a wood chipper operated with a tractor. The proof of technical and operational concept is achieved. The potential for wood energy from waste-wood has been identified as very large.

6. The first test results show that while large amounts of chips can indeed be produced, the market for the wood chips is still erratic, as the paper factory is the only large buyer and this buyer is very unreliable. Further smaller clients for chips must be developed.
7. A partnership is establishing itself between entrepreneurs in the southern highlands and a consortium in the Emmental in Switzerland that further explores and develops the ventures emerging out of these opportunities with forestry and wood energy.

Business idea

To establish a rental/leasing service that rents or leases “chipper trains” to small entrepreneurs operating in the area. A chipper train is: A mobile wood chipper that goes into forests to chip on site, plus a transporter that brings the chips to the client. There are therefore two businesses:

A. That of small rural chipper entrepreneurs who buy waste wood, process it into chips, transport it to clients, and sell the chips there
B. A rental/leasing service that provides the equipment to rural small entrepreneurs and acts as a base for servicing and maintenance.

This can work with the existing large buyers should their demand establish itself as being regular at acceptable prices. But another business will need to be explored to enhance the chances of the above two businesses A and B:

C. Establish smaller decentralized units that convert wood chips into electricity for local use or for feeding into the grid, along with heat for processing purposes, eg. tea factories.

Operational concept

We are talking here of three separate interdependent operations, ie. a) providing and servicing/maintaining the required equipment for wood chipping, b) wood-chipping itself along with delivery to client, c) establishment of new smaller clients for wood chips through installation of suitable energy conversion systems at their locations, eg. tea factories.

Investment requirements

Experiences so far suggest that the equipment for one small full chipper train costs approximately about 80'000 USD.
Investments in tea factories for converting them into chip-based electricity is yet to be analysed.

Proposed Action

1. Further build the business case for small units (up to 300kW) that can convert wood chips into electricity and heat.
2. RAVI to further coordinate the efforts between the Emmental and southern highlands
3. Identify investors/organizations who would be interested to assist in exploring these ventures further

Potential investors are invited to take up contact with RAVI in case they think this venture may be something they could be interested in.