

Original Research Article

<https://doi.org/10.20546/ijcmas.2017.607.149>

Cost and Returns of Briquette Production in Tamil Nadu, India

N. Kanagaraj*, C. Sekhar, M. Tilak and B. Palanikumaran

Forest College and Research Institute, Mettupalayam, Tamil Nadu, India

**Corresponding author*

ABSTRACT

Keywords

Briquette,
Fixed cost,
Variable cost.

Article Info

Accepted:
17 June 2017
Available Online:
10 July 2017

The study was taken up to estimate the cost and returns of briquette production in Tamil Nadu. Structured interview schedule was used to collect necessary data from the briquette production unit. Total cost of briquette production was found to be Rs 3441 per tonne. In which fixed and variable cost was Rs 341 per tonne, Rs 3100 per tonne respectively. Gross returns of briquette production were Rs 4700 per tonne.

Introduction

Briquetting is the technology to convert all types of agricultural and forestry waste into solid fuel. Briquettes are formed in cylindrical logs using high mechanical pressure without the use of chemical or binder.

The product is a replacement to conventional fossil fuels and can be used across various manufacturing industries such as boilers, furnaces and kilns. Bio-Briquette is an eco-friendly solid biofuel which helps to reduce pollution, contributing to greener environment and save worthy foreign exchange. Briquetting works on the basic concept of “Wealth from Waste”.

The briquettes are used for energy generation helping farmers to earn money from the waste. Briquetting of residues takes place with the application of pressure, heat and on the loose materials to produce the briquettes.

Materials and Methods

Collection of primary data

The structured interview schedules were used for data collection from the Briquetting Industry (Appendix –1).

The schedule was pre-tested to make necessary modifications and delete irrelevant and ambiguous questions. These pre-tested schedules were thus finalized and used for the collection of required data from the Briquette manufacturer. Though they were not in the habit of keeping records and accounts, they were able to furnish the required details by virtue of their experience in the manufacturing of biomass briquette. Even if some of the industries have records, they are hesitant to disclose business related information. However, concerted efforts have

been taken to collect essential data by administering repeated questions and cross checks made for getting quality data.

Collection of secondary data

Secondary data on number of briquetting units available across different districts of Tamil Nadu were accessed from development department and the government Institutions of industrial importance through the practice of firm to firm inquiry approach. Collected data were analyzed and documented using appropriate econometric tools used for this purpose.

Method of estimation

Tabular analysis

For making simple comparisons, details on general characteristics of the Briquetting Industries, Sources of Procurement, Fixed Investment, Employment pattern, Cost and Returns and Marketing of Briquette were analyzed through simple percentage analysis.

Cost and returns

In this present study, the concept of fixed cost and Variable cost are used.

Fixed costs

The Fixed cost included Salaries to permanent staff, Rent paid for land, Electricity Installation, Depreciation on Buildings, Machineries, Interest on Fixed capital and Property tax. All these were analysed and incorporated for discussion for production of one tonne of briquette.

Variable cost

Variable cost included the cost of Raw material, Transportation cost, Cost of Electricity, Man power, Repair and

Maintenance Cost, Stationary and Supplies and Cost of Storage. The details of variable costs involved in production of one tonne of briquette were also arrived at.

Total cost

The total cost was the sum of fixed cost and Variable cost.

Inputs

Costs toward the Raw materials like Saw dust, Wood chips, Groundnut Shell, Tapioca waste, packing materials were valued at market price prevailing in the study area at the time of purchase. Human labor was measured in term of man days.

Depreciation

Depreciation was worked out at the rate of 3.34 percent for building, 11.34 percent for Machinery (Vishwanath, 2007).

Interest

Interest on Fixed capital was computed at the rate of 10 percent, the rate at which nationalized banks advance loans to small scale sector. Property tax was worked out at 2 percent of total fixed investment.

Results and Discussion

Fixed cost

The details of fixed cost involved per tons of briquette production were furnished in table 1. Similarly Paul A. Samuelson (1973) referred fixed costs as which do not vary with the output in the short run.

He has also stated that fixed costs are often called overhead costs and committed for rental, maintenance, depreciation, over heads, salaries and wages, etc. The total fixed cost of

briquette production was Rs.341 per ton, in which the highest fixed cost incurred in interest on working capital (128 Rs per ton), followed by depreciation on machinery (65.45 Rs per ton) and Rent paid for land (48.00 Rs per ton).

The lowest fixed cost was incurred in Depreciation on Building which was 5.93 Rs per ton. Similar study was carried out by Tripathi *et al.*, (1998), he reported that in a briquetting plant the major capital investments are towards plant and machinery, land and building components.

On an average, 65 percent of the total cost is spent on plant and machinery, 9 percent on land, 18 percent on building and 7 percent on other miscellaneous aspects.

Variable cost

The total variable cost involved in briquette production was presented in table 2. According to Tandon and Dhondyal (1971) variable cost is otherwise known as prime cost and these costs are related to the variable resources and they normally change with the level of output. The fixed cost of briquette production per tone was 3100.

The cost of raw material alone accounted for 2300 Rs per tonne (74.19 percent). Contrastingly Naidu *et al.*, (2006) said that the cost of conversion to briquettes work out to Rs. 650 to 700 per tonne based on the actual field data. This high cost was due to the high wear and tear of equipment and high consumption of electricity.

Table.1 Fixed cost in per tonne of briquette production

S.No	Particulars	Rs per tone
1.	Salary to Permanent Staff	39.00 (11.43)
2.	Rent Paid for Land	48.00 (14.05)
3.	Electricity Installation	30.00 (8.79)
4..	Depreciation on Building (@ 3.34 Percent)	5.93 (1.73)
5.	Depreciation on Machinery (@ 11.3 Percent)	65.45 (19.19)
6.	Property Tax 2 (%) of Total Investment	25.00 (7.31)
7.	Interest on Working Capital (@ 10 Percent)	128.00 (37.50)
	Total Fixed Cost	341.00 (100)

(Figures in parentheses indicate percentage to total)

Table.2 Variable cost in Rs/tonne of briquette production

S.No	Particulars	Rs/Tonne
1.	Cost of Raw Material	2300.00 (74.19)
2.	Transportation Cost	180.00 (5.80)
3.	Cost of Electricity	230.00 (7.45)
4.	Man Power	240.00 (7.74)
5.	Repair and Maintenance Cost	70.00 (2.25)
6.	Stationary and Supplies	50.00 (1.61)
7.	Cost of Storage	30.00 (0.96)
	Total Variable Cost	3100.00 (100)

(Figures in parentheses indicate percentage to total)

Table.3 Cost of production of briquettes (Rs/Tonne)

S.No	Particulars	Rs/Tonne
1.	Fixed Cost	341.00 (9.91)
2.	Variable Cost	3100.00 (90.09)
	Cost of Production per Tonne	3441.00 (100)

(Figures in Parentheses indicate Percentage to Total)

Table.4 Returns from briquette production

S.No	Particulars	Rs per Tonne
1.	Gross Return	4700.00
2.	Total Cost	3441.00
	Net Return per Tonne	1229.00

Apart from this, high interest on working capital and term loan was also required to be paid by the manufacturers. In present study the cost of man power and electricity are on bar with each other with 240 Rs/tonne (7.74%), 230 Rs/tonne (7.45 %) respectively. the cost incurred in storing of briquette was Rs 30/ tonne (0.96%). Vimal (2002) reported that free raw material that will make briquette production very cheap and economical one.

Total cost

Total cost is the sum of total fixed cost and total variable costs at any given level of output (Ward and Cauvery *et al.*, 1992). The total cost of production was furnished in the Table 3.

In total cost of production the fixed cost and variable cost accounted as 341 Rs per tonne and 3100 Rs per tonne respectively.

Returns from briquette production

Murugadass (1998) defined gross income as income realization made by the sale of the produce. The total amount of returns from the briquette production was furnished in the table 4.

Table 4 revealed that the gross return generated per tonne of briquette is arrived at Rs 4700 and generated a net income of Rs 1229 per tonne of briquette after deducting the cost of production involved per tonne of briquette. Ministry of New and Renewable Energy (2009) reported that escalating raw material prices is a major cause for concern. Briquettes are priced between Rs. 4000 to Rs. 4800 per tonne.

This analysis was extended by the calculation of the cost of the production process of the product discussed. On the basis of the research conducted in the enterprise, the total cost of producing the ton of briquettes from biomass was estimated as Rs 3441 per tonne. The gross return of briquettes was Rs 4700 per tonne. The net returns of the briquetting industry were Rs 1229 per tonne.

References

- Ministry of New and Renewable Energy (MNRE) Government of India. 2009. *Bio Energy India*, (Winrock International India-WII) (2): Dec 2009, p 42.
- Murugadass, O. R. 1998. "Economics of Production and Marketing of Tomato in Coimbatore South Taluk "(Unpublished

- M.Sc (Ag) Thesis Submitted to Department of Agricultural Economics, TNAU, Coimbatore.), p17.
- Paul A. Samuelson. 1973. "Economics", (McGraw Hill Kogakusha Ltd: Tokyo), p.465.
- Tandon.P.K. and Dhandyal.S.P.1971. "Principles and Methods of Farm Management", (Kanpur Nir-Ko-BalHam Press), p.383.
- Tripathi, A.K., P.V.R.lyer and Kandpal. T.C.1998."A Techno-Economic Evaluation of Biomass Briquetting in India". *Biomass and Bioenergy*, 14 (5-6) pp. 479-488.
- Vimal, R.K. 2002. "Indian Renewable Energy Development Agency (IREDA)", India, Personal Communication.
- Vishwanath, S.R. 2007. "Corporate Finance: Theory and Practice", (Sage Publications: New Delhi) P.187.
- Ward and Cauvery. 1992. "Economics for a Developing World", (Longman: London) 3rd Edition, p, 54.

How to cite this article:

Kanagaraj, N., C. Sekhar, M. Tilak and Palanikumaran, B. 2017. Cost and Returns of Briquette Production in Tamil Nadu. *Int.J.Curr.Microbiol.App.Sci*. 6(7): 1238-1242.
doi: <https://doi.org/10.20546/ijcmas.2017.607.149>