

Financial Value Savings Regarding RDF Technology

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Abstract: *One of the TPA Cilacap, TPA Tritih Lor in Jeruklegi Subdistrict, which is the largest landfill in Cilacap Regency, receives approximately 120 tons of waste per day. This landfill will reach its maximum capacity in 2018 (DLHK, 2017). The problems that arise in the city of Cilacap with the presence of a pile of garbage in the landfill that is not managed properly is getting more and more days because it is directly proportional to population growth and will also impact the decline in environmental quality. Tritih Lor Landfill in Jeruklegi District, which is the largest landfill in Cilacap Regency, receives approximately 120 tons of waste per day. This landfill will reach its maximum capacity in 2018. One of the sustainable long-term methods chosen by the Cilacap District Government is to transform urban waste into Refuse Derived Fuel (RDF), which is a high calorific value separation from processed waste, which can be used as an alternative fuel for cement plants. RDF processing obtained from urban waste will reduce the landfill volume and reduce greenhouse gas (GHG) emissions by avoiding the formation of methane gas in the landfill. In this study, research related to the comparison of the value of investment and operational processing of conventional waste compared to investment and operational processing of waste using RDF. This paper was conducted using integrated research method, by adopting and comparing data and analysis from other studies. Data analysis in this study included as much as 120 tons of waste / day in Cilacap city. Total cost required for 15 years. The conclusion of this research is 1) Perspective of RDF-based Waste Management System in Cilacap city can be applied sustainably, because RDF-based waste processing becomes an economical priority scale because up to now flame RDF products made from waste waste are processed using RDF machines, 2) Price of flame RDF is cheaper when compared to its predecessor briquette products based on coal waste, 3) The market share of RDF flame products is still very potential considering that RDF flame can be used as fuel in cement plants, steam power plants and household activities, 4) RDF Flame in the long run can be used as an alternative to oil and gas fuel.*

Keywords: Financial Value Saving, Refuse Derived Fuel (RDF)

1. Introduction

The Urban Waste Disposal has become a major concern of the Cilacap Regency Government. Urban waste is currently estimated at 2.25 liters per household / day. Taking into account population growth, the total urban waste that will be generated reaches around 1.15 million m³ / year by 2020. One of the TPA Cilacap, TPA Tritih Lor in Jeruklegi Subdistrict, which is the largest landfill in Cilacap Regency, receives approximately 120 tons of waste per day. This landfill will reach its maximum capacity in 2018 (DLHK, 2017).

The Cilacap city has a problem with the existence of a pile of garbage in the landfill that is not managed properly is getting more and more days because it is directly proportional to population growth and will also affect the decline in environmental quality because it will produce CO₂ emissions from methane gas generated from waste. The existence of uncontrolled scavengers operating in the TPA along with heavy equipment (trucks, excavators and bulldozers) is a separate social problem that requires intensive handling (Baskoro at, al, 2010). The existing landfill conditions at the present, it is a necessity for the Cilacap District Government to build a new landfill, or to see some alternative methods for managing urban waste. One of the sustainable long-term methods chosen by the

Cilacap District Government is to transform urban waste into Refuse Derived Fuel (RDF), which is the separation of high calorific



Figure 1: The Location Map of Study Area

2. Methodology

This paper was conducted using integrated research method, by adopting and comparing data and analysis from other studies. Data analysis in this study included as much as 120 tons of waste / day in Cilacap city. Total cost required for 15 years:

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3. Result

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Domestic waste of Cilacap Regency has an organic fraction of more than 50% which is a serious environmental risk when disposed of in the landfill, because it will experience uncontrolled biological decomposition. The basis for selecting RDF technology for waste processing is to optimize the decomposition of organic fractions, thereby reducing the potential for pollution of the fraction in the landfill. Waste management using RDF method is more cost-effective than landfill sanitary technology or even incineration technology and is therefore considered an attractive alternative technology.

The total (financial) cost of waste processing is calculated in total, which includes the cost of land acquisition, infrastructure investment costs and supporting facilities, maintenance-maintenance costs, as well as the cost of procurement of sanitary landfill divided by the total amount of waste handled. The cost of collecting and transporting waste is not comparable in this case, because whatever type of waste processing technology will be implemented, the collection and transportation of waste collection subsystems must still be carried out (to meet minimum service standards).

Non-Financial Savings Related to RDF Technology

Savings or efficiency obtained include:

- 1) Reducing the use of non-renewable fossil fuels such as coal, and reducing the environmental impacts associated with the extraction of natural materials
- 2) Contributing to the reduction of greenhouse gas emissions by replacing the use of fossil fuels with other materials that will have to be burned with the appropriate emissions and final residues.
- 3) Reducing the need for land needed for landfill so as to reduce emissions and also the obligations associated with adequate waste management in the landfill.

Therefore Waste Management Based on RDF can solve waste problems in the city of Cilacap.

4. Conclusions

The conclusion of this research is 1) Perspective of RDF-based Waste Management System in Cilacap city can be applied sustainably, because RDF-based waste processing becomes an economical priority scale because up to now flame RDF products made from waste waste are processed using RDF machines, 2) Price of flame RDF is cheaper when compared to its predecessor briquette products based on coal waste, 3) The market share of RDF flame products is still very potential considering that RDF flame can be used as fuel in cement plants, steam power plants and household activities, 4) RDF Flame in the long run can be used as an alternative to oil and gas fuel.

5. Suggestion

RDF-based waste processing in the long run is expected to be a transition from the waste management management

function that has been the burden of the Cilacap Regency Government so that it can be more productive and profitable for all parties involved in it, and can be replicated in other areas.

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