

ABSTRAK

Permasalahan sampah di Kabupaten Jepara terus meningkat seiring pertumbuhan penduduk, sementara pengelolaannya masih didominasi oleh pembuangan ke Tempat Pemrosesan Akhir (TPA). Oleh karena itu, diperlukan perencanaan Tempat Pengolahan Sampah Terpadu (TPST) yang mampu mengolah sampah secara terintegrasi. Perencanaan dilakukan dengan metode *Mechanical Biological Treatment* (MBT) menggunakan teknologi *biodrying* dan *composting* berdasarkan analisis timbulan, komposisi, dan karakteristik sampah. Sistem pengolahan meliputi pemilahan sampah, pengolahan sampah organik menjadi kompos, serta pengolahan sampah anorganik menjadi *Refuse Derived Fuel* (RDF). Hasil perencanaan menunjukkan TPST mampu mengurangi sampah yang dibuang ke TPA serta menghasilkan kompos, RDF, dan material daur ulang. Analisis kelayakan finansial menunjukkan nilai *Net Present Value* (NPV) sebesar Rp21.118.351.613,66, *Internal Rate of Return* (IRR) sebesar 8%, dan *Payback Period* (PP) selama 10 tahun, sehingga perencanaan TPST dinyatakan layak secara teknis dan finansial.

Kata kunci: Tempat Pengolahan Sampah Terpadu, *Mechanical Biological Treatment*, *Biodrying*, *Composting*, *Refuse Derived Fuel*.

ABSTRACT

Waste management problems in Jepara Regency continue to increase along with population growth, while the existing management system is still dominated by disposal to the Final Disposal Site (TPA). Therefore, the planning of an Integrated Waste Processing Facility (TPST) is required to process waste in an integrated manner. The planning was conducted using the Mechanical Biological Treatment (MBT) method with biodrying and composting technologies based on the analysis of waste generation, composition, and characteristics. The treatment system includes waste sorting, processing of organic waste into compost, and processing of inorganic waste into Refuse Derived Fuel (RDF). The planning results indicate that the TPST is able to reduce the amount of waste disposed of to the landfill while producing compost, RDF, and recyclable materials. The financial feasibility analysis shows a Net Present Value (NPV) of Rp21.118.351.613,66, an Internal Rate of Return (IRR) of 8%, and a Payback Period (PP) of 10 years. Therefore, the TPST planning in Jepara Regency is considered technically and financially feasible.

Keywords: *Integrated Waste Processing Facility, Mechanical Biological Treatment, Biodrying, Composting, Refuse Derived Fuel.*