

ABSTRAK

ANALISIS KELAYAKAN FINANSIAL PROYEK PEMBANGKIT LISTRIK TENAGA SAMPAH (PLTSa): STUDI PADA PT ADHI KARYA (Persero) UNTUK PLTSa MARUNDA DI DKI JAKARTA

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Pengelolaan sampah menjadi permasalahan di kota DKI Jakarta karena volume yang meningkat pesat dan keterbatasan lahan. Konsep *Waste to Energy* (WtE) menjadi konsep yang akan dilakukan untuk pengelolaan sampah dimana sampah akan dikelola menjadi energi listrik dan mereduksi volume sampah secara signifikan dengan membangun pembangkit listrik WtE/PLTSa, salah satunya di Marunda DKI Jakarta.

Infrastruktur pengelolaan sampah menjadi salah satu infrastruktur yang bisa dikerjasamakan dengan skema Kerjasama Pemerintah dengan Badan Usaha (KPBU) berbentuk proyek investasi dengan masa konsesi 20 tahun dan metoda BOT (*Build Operate and Transfer*). Badan Usaha akan mendapatkan pengembalian investasi berupa biaya tarif listrik sebesar 11.8 USD cent per kWh dan biaya layanan pengolahan sampah/*tipping fee* sebesar Rp. 500.000 per ton sampah sesuai yang diatur dalam Perpres No. 35 Tahun 2018 tentang Percepatan Pembangunan Instalasi Pengolah Sampah Menjadi Energi Listrik Berbasis Teknologi Ramah Lingkungan.

Dengan menggunakan konsep *capital budgeting* dinilai kelayakan finansial proyek PLTSa Marunda dengan metoda *Net Present Value* (NPV), *Internal Rate of Return* (IRR), *Modified Internal Rate of Return* (MIRR), *Profitability Index* (PI) dan *Payback Period*. Dari hasil analisis skenario kondisi *most likely* didapat nilai NPV 1.438.931,36 juta IDR > 0, IRR 11,55% > Discount rate 6,96%, MIRR 8,68% > Discount rate 6,96%, PI 1,42 > 1 dan Payback period 6,51 < 10 tahun sehingga proyek Pembangkit Listrik Tenaga Sampah/PLTSa Marunda dinilai layak secara finansial.

Dari hasil analisis sensitivitas, variabel tarif listrik, *tipping fee*, variabel belanja modal (*capex*) dan beban operasional dan pemeliharaan (*opex*) mempunyai pengaruh besar dalam kelayakan finansial. Penurunan setiap 10% dari tarif listrik akan menurunkan kurang lebih nilai NPV sebesar 24%, nilai IRR sebesar 9%, dan nilai MIRR sebesar 4,5%. Penurunan setiap 10% dari *tipping fee* akan menurunkan kurang lebih nilai NPV sebesar 20%, nilai IRR sebesar 7,5%, dan nilai MIRR sebesar 3,5%. Kenaikan setiap 10% dari *capex* akan menurunkan kurang lebih nilai NPV sebesar 21%, nilai IRR sebesar 8%, dan nilai MIRR sebesar 4,15%. Kenaikan setiap 10% dari *opex* akan menurunkan kurang lebih nilai NPV sebesar 14,5%, nilai IRR sebesar 6%, dan nilai MIRR sebesar 2,75%.

Kata kunci: Analisis kelayakan finansial, *Capital Budgeting*, Analisis Skenario, Analisis Sensitivitas

ABSTRACT

FINANCIAL FEASIBILITY ANALYSIS OF WASTE TO ENERGY POWER PLANT (WtE) PROJECT: STUDY IN PT ADHI KARYA (Persero) FOR WtE MARUNDA IN DKI JAKARTA

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Solid waste management is a problem in the city of DKI Jakarta because of the rapidly increasing volume and limited land. The Waste to Energy (WtE) concept is a concept that will be carried out for solid waste management where solid waste will be managed into electrical energy and reduce the volume of solid waste significantly by building a WtE power plant, one of which is in Marunda DKI Jakarta.

The solid waste management infrastructure is one of the infrastructures that can be cooperated with the scheme of Public Private Partnership (PPP) in the form of investment projects with a 20-year concession period and the BOT (Build Operate and Transfer) method. The Business Entity will receive a return on investment in the form of electricity tariff fees of 11.8 USD cent per kWh and a garbage processing/tipping fee of Rp. 500.000 per tonne of solid waste as stipulated in the Presidential Regulation No.35 of 2018 concerning the Acceleration of the Construction of Solid Waste Processing Installation into Electric Energy Based on Green Technology.

Using the concept of capital budgeting, the financial feasibility of the WtE Marunda project was assessed using the methods of Net Present Value (NPV), Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR), Profitability Index (PI) and Payback Period. From the results of the most likely condition of scenario analysis, get the NPV value of 1.438.931,36 million IDR > 0, IRR 11,55% > Discount rate 6,96%, MIRR 8,68% > Discount rate 6,96%, PI 1,42 > 1 and Payback period 6,51 years < 10 years so that it is financially feasible.

From the results of the sensitivity analysis, variables of the electricity tariff, tipping fee, capital expenditure (capex) and operational and maintenance expenditure (opex) have a major influence on financial feasibility. Decreasing every 10% of the electricity tariff will reduce approximately the NPV value by 24%, the IRR value by 9%, and the MIRR value by 4,5%. Decreasing every 10% of the tipping fee will reduce approximately the NPV value by 20%, the IRR value by 7,5%, and the MIRR value by 3,5%. The increase of every 10% of the capex will decrease approximately the NPV value by 21%, the IRR value by 8%, and the MIRR value by 4,15%. An increase of every 10% of opex will decrease approximately the NPV value by 14,5%, the IRR value by 6%, and the MIRR value by 2,75%.

Keywords: *Financial feasibility analysis, Capital Budgeting, Scenario Analysis, Sensitivity Analysis*