1324/S1-TL/0426-P

STUDI TIMBULAN, KOMPOSISI, KARAKTERISTIK DAN POTENSI DAUR ULANG SAMPAH KAMPUS PROKLAMATOR I UNIVERSITAS BUNG HATTA

TUGAS AKHIR

Sebagai salah satu syarat untuk menyelesaikan
Program Strata-1 pada
Departemen Teknik Lingkungan
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PADANG

2026

ABSTRAK

Pengelolaan sampah di perguruan tinggi semakin menjadi permasalahan lingkungan seiring pertumbuhan aktivitas kampus. UU No. 18 Tahun 2008 Pasal 13 mewajibkan setiap institusi mengelola sampah secara terpadu, namun Kampus Proklamator I Universitas Bung Hatta belum memiliki TPS sesuai Permen PU No. 03/PRT/M/2013, tidak menerapkan pemilahan di sumber, dan seluruh sampah dibuang langsung ke TPA tanpa pengolahan. Belum pernah pula dilakukan kajian komprehensif mengenai timbulan dan karakteristik sampah kampus ini. Penelitian ini bertujuan menganalisis timbulan, komposisi, karakteristik, dan potensi daur ulang sampah, serta memberikan rekomendasi pengelolaan sampah Kampus Proklamator I Universitas Bung Hatta. Kajian pustaka mencakup teori timbulan, komposisi, karakteristik fisika-kimia-biologi sampah, konsep daur ulang, dan profil kampus, berlandaskan SNI 3964-2025, Permen PU No. 03/PRT/M/2013, serta penelitian terdahulu sebagai landasan komparatif. Pengukuran mengacu SNI 3964-2025 selama 3 hari mewakili hari kerja, libur, dan puncak. Dari 33 fasilitas yang teridentifikasi, ditetapkan 17 titik sampling mencakup aktivitas perkantoran, perkuliahan, kemahasiswaan, fasilitas lainnya, jalan, dan taman. Keandalan survei mencapai 98,17% dengan PSE 1,83% dan SR 0,51. Total rata-rata timbulan 67,55 kg/hari atau 455,45 liter/hari, dengan satuan timbulan kampus 0,0388 kg/orang/hari dan jalan/taman 0,0117 kg/m². Komposisi didominasi sampah makanan (26,0%), kertas/karton (17,2%), plastik keras (16,7%), dan plastik lembaran (14,0%). Karakteristik fisika menunjukkan densitas 0,149 kg/liter; kimia meliputi kadar air 34,11%, volatile 51,84%, abu 8,77%, fixed carbon 5,30%, dan C/N 19,12; biologi menunjukkan biodegradabilitas 41,13% dengan populasi lalat 2 ekor/m². Potensi daur ulang 84,1%, meliputi organik layak kompos serta plastik (39,29%), kertas (38,35%), dan kaca (12,50%) layak jual. Evaluasi eksisting menunjukkan pengelolaan belum optimal akibat tidak adanya pemilahan di sumber dan fasilitas pengomposan. Rekomendasi meliputi pemilahan 5 jenis sampah, kewajiban APD bagi petugas, pembangunan TPS 3R minimal 200 m², dan pengelolaan B3 melalui pihak ketiga berwenang. Data penelitian dapat dijadikan acuan perencanaan pengelolaan sampah kampus. Disarankan pengukuran diperbarui setiap lima tahun dan civitas akademika dilibatkan aktif.

Kata Kunci: Kampus Proklamator I Universitas Bung Hatta, karakteristik sampah, komposisi sampah, potensi daur ulang, timbulan sampah.

ABSTRACT

Waste management in higher education is an escalating environmental challenge due to increasing campus activities. While Article 13 of Law No. 18/2008 mandates integrated waste management, the Proklamator I Campus of Universitas Bung Hatta lacks a waste transfer station (TPS) compliant with Permen PU No. 03/PRT/M/2013, fails to implement source segregation, and disposes of all waste directly to landfills without processing. No comprehensive study on the generation and characteristics of this campus's waste has been conducted. This research aims to analyze waste generation, composition, characteristics, and recycling potential, while providing management recommendations. The literature review covers theories on generation, physical-chemical-biological characteristics, recycling concepts, and the campus profile, based on SNI 3964-2025, Permen PU No. 03/PRT/M/2013, and comparative prior studies. Measurements followed SNI 3964-2025 over three days, representing working, holiday, and peak periods. From 33 identified facilities, 17 sampling points were selected across offices, classrooms, student centers, other facilities, roads, and gardens. The survey achieved a reliability of 98.17%, with a PSE of 1.83% and SR of 0.51. The total average waste generation is 67.55 kg/day or 455.45 liters/day, with campus generation rates of 0.0388 kg/person/day and 0.0117 kg/m² for roads/gardens. The composition is dominated by food waste (26.0%), paper/cardboard (17.2%), hard plastic (16.7%), and film plastic (14.0%). Physical characteristics show a density of 0.149 kg/liter; chemical properties include 34.11% moisture content, 51.84% volatile matter, 8.77% ash, 5.30% fixed carbon, and a 19.12 C/N ratio; biological assessment indicates 41.13% biodegradability with a fly population of 2 insects/m². The recycling potential is 84.1%, comprising compostable organic matter and marketable plastics (39.29%), paper (38.35%), and glass (12.50%). Evaluation reveals suboptimal management due to the absence of source segregation and composting facilities. Recommendations include five-category waste segregation, mandatory PPE for workers, construction of a minimum 200 m² 3R-TPS, and third-party hazardous waste management. These data serve as a reference for campus planning. It is recommended that measurements be updated every five years and that the academic community be actively involved.

Keywords: Kampus Proklamator I Universitas Bung Hatta, recycling potential, waste characteristics, waste composition, waste generation.