

Amanda Setyo Agustiana. NIM 220331100042. *Life Cycle Assessment* Produksi Dumpling Keju Di PT. Indo Lautan Makmur Sidoarjo. Dibawah Bimbingan **Dian Farida Asfan, S.T.,M.T.** dan **R. Arief Firmansyah, S.TP.,M.Si.**

ABSTRAK

Life Cycle Assessment merupakan metode yang digunakan untuk menilai dampak lingkungan yang timbul dari suatu produk atau proses sepanjang siklus hidupnya berdasarkan standar internasional ISO 14040 dan ISO 14041. Berdasarkan data BPS tahun 2023, Kabupaten Sidoarjo memiliki 1.196 perusahaan industri makanan dan minuman sehingga diperlukan evaluasi dampak lingkungan dari aktivitas produksi dalam skala besar. Salah satu perusahaan yang perlu dilakukan evaluasi adalah PT. Indo Lautan Makmur yang memproduksi dumpling keju dalam skala besar. Proses produksi dumpling keju selama 8 jam menghasilkan 1.962,228 kg produk dengan penggunaan energi listrik dan pembakaran cangkang kulit kemiri serta melibatkan berbagai bahan baku yang berpotensi menimbulkan dampak lingkungan. Penelitian ini bertujuan menganalisis dampak lingkungan pada produksi dumpling keju menggunakan metode LCA berbasis *CML Baseline* dan *Eco Indicator 99* dengan batasan *gate to gate*. Hasil analisis metode *CML Baseline* menunjukkan dampak tertinggi pada *output characterization* terjadi pada tahapan *mixing 2*, terutama kategori *global warming* sebesar $5,4 \times 10^3$, sedangkan *output normalization* tertinggi berada pada kategori *freshwater aquatic ecotoxicity* sebesar $2,87 \times 10^{-7}$. Kemudian pada metode *eco indicator 99*, *output characterization* tertinggi didominasi tahapan *mixing 2* dan pencetakan, sedangkan *output normalization* tertinggi terdapat pada kategori *radiation* dengan kontribusi terbesar pada tahapan *mixing 1* dan *mixing 2* masing – masing sebesar 50%.

Kata Kunci : Dumpling Keju, *Life Cycle Assessment*, *SimaPro*

Amanda Setyo Agustiana. NIM 220331100042. *Life Cycle Assessment of Cheese Dumpling Production at PT. Indo Lautan Makmur Sidoarjo. Under the guidance Dian Farida Asfan, S.T.,M.T. and R. Arief Firmansyah, S.TP.,M.Si.*

ABSTRACT

Life Cycle Assessment (LCA) is a method used to evaluate the environmental impacts generated by a product or process throughout its life cycle based on the international standards ISO 14040 and ISO 14041. According to Statistics Indonesia (BPS) data in 2023, Sidoarjo Regency has 1,196 food and beverage manufacturing companies, indicating the need for environmental impact evaluations of large-scale production activities. One of the companies requiring such an evaluation is PT. Indo Lautan Makmur, which produces cheese dumplings on a large scale. The production process of cheese dumplings generates 1,962.228 kg of product within 8 hours, utilizing electrical energy and candlenut shell combustion as fuel, while involving various raw materials that have the potential to cause environmental impacts. This study aims to analyze the environmental impacts of cheese dumpling production using the LCA method based on the CML Baseline and Eco Indicator 99 approaches with a gate-to-gate system boundary. The results of the CML Baseline analysis showed that the highest impact in the characterization output occurred at the mixing 2 stage, particularly in the global warming category with a value of 5.4×10^3 , while the highest normalization output was found in the freshwater aquatic ecotoxicity category with a value of 2.87×10^{-7} . Furthermore, the Eco Indicator 99 analysis indicated that the highest characterization output was dominated by the mixing 2 and molding stages, whereas the highest normalization output was observed in the radiation category, with the largest contributions originating from the mixing 1 and mixing 2 stages, each accounting for 50%.

Keywords: *Cheese Dumpling, Life Cycle Assessment, SimaPro.*