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Implementation of Life Cycle Assessment (LCA) on Fish Products

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Abstract

Life Cycle Assessment (LCA) is a technique to assess the environmental aspects and potential impacts associated with a product or service, by: compiling an inventory of relevant inputs and outputs of a product system, evaluating the potential impacts associated with those inputs and outputs, interpreting the results of the inventory analysis and impact assessment phases in relation to the objectives of the study.

The LCA studies the environmental aspects and potential impacts throughout a product's life from raw material acquisition through production, use and disposal. The general categories of environmental impacts needing consideration include resource use, human health and ecological consequences.

This research was intended to find the LCA of sea fishes, which were caught and sold in Baron, Drini and Ngrenahan beaches in Gunung Kidul region of Yogyakarta Special Province. This region is the most potential place in Yogyakarta in producing sea fishes. Other aims of this research were to know the potency of sea fishes in three beaches and to evaluate the environmental impacts if the fishes were processed into the foods. The samples of the research were fresh fishes, fried fishes and barbequed fishes.

The results of the research depicted, that for catching 1 kg fresh fish was needed 3600 kcal human energy; 7.47 MJ for fuel and produced CO₂ 0.385 mg, SO₂ 0.116 mg, NO_x 0.0743 mg and particle's pollutant 0.0107 mg. If the fresh fishes were processed into the barbequed or fried fishes, the processing of 1 kg fresh fish was needed 62.5 kcal human energy, 3.50 MJ for fuel and yielded the gas of CO₂ 38.10 mg, SO₂ 0.0825 mg, NO_x 0.585 mg and particle's pollutant 0.7325 mg.

The potency of the beach was average 100-150 kg/boat/day. To know the food safety of the fishes, the microbiological tests were conducted. The results of these tests were: Total Plate Count lay between 10⁵ and 10⁸, all the samples were negative from the presence of *Escherichia coli*, *Salmonella sp* and *Staphylococcus sp*.

Keywords: Environmental aspects, fish products, life cycle assessment