

Abstract

This research employed life cycle assessment to evaluate the environmental impact of bio-fuel, using 1,000 kg raw material as the working unit. The scope of study covered raw material extraction and manufacturing. The assessment used Simapro 7.1 database and Environmental Design of Industrial Products (EDIP) method to assess the impact of life cycle. The method involved the process of Classification and Impact Category without giving a single number for the results. This analysis was divided into three groups of impacts; impact on human health, impact on ecosystems, and impact on resource use. The findings revealed that toxicity in the air toward humans (Human toxicity air) resulted from raw material extraction (99.9808%), and acidification resulted from production processes (75.10%). For the effects of chronic toxicity in water (Ecotoxicity water chronic), it was found that this was mainly due to raw material extraction (99.9882%). The results of this research could be used to identify suitable improvements targets to reduce environmental impact.