**Thesis Title** Life Cycle Assessment of Palm Oil Biodiesel Production

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## Abstract

Recently, bio-diesel fuel is interestingly produced from various kinds of plant and animal fat. Palm-oil bio-diesel is one of the potential resources as a raw material for bio-diesel production in Thailand. Before palm-oil bio-diesel becomes a common commodity product in the market, it is necessary to indicate clearly about the environmental impacts of bio-diesel or so call life cycle assessment from cradle to grave. In order to generate bio-diesel, energy and materials are input and waste and emissions are output as well, in which certainly affect to the environment. Therefore, LCA of palm-oil bio-diesel is applied to quantify and verify the impacts of palm oil bio-diesel from life cycle aspects. The objective of this paper is to analyze the environmental impacts of palm-oil bio-diesel based on EDIP methodology. The system boundary is focused into 3 stages: oil palm plantation, trans-esterification and use stage. As the result, it shows the environmental impact per one liter of palm oil bio-diesel so that we can compare with ordinary diesel or use these result to minimize the impacts or improve the production stage to reduce the emission. This study indicate the use stage is the most environmental impact equal 52.09% , next the production of biodiesel and agriculture procedure equal 41.21% and 6.7% respectively. According to these concerns. This study not only can make a green awareness but also this will lead to a sustainable social of Thailand. The LCC results show the cost of Palm Oil biodiesel production mainly from the operation cost in both agronomics and biodiesel production process while the cost per unit is 19.86 Baht/liter