Cradle to gate simple life cycle assessment of biodiesel production in Indonesia

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Abstrak

The focus of this research is to analyze potential environmental impact in the supply chain of palm oil biodiesel industries. Simple Life Cycle Assessment (LCA) is applied to analyze impacts, produced by the three main units in the supply chain of Palm-Oil-based Biodiesel, which are Palm Plantation, CPO mill, and Biodiesel Plant. We developed LCA calculation model using spreadsheet software, used to assess a number of input scenarios to evaluate the best scenario, in variation of: land quality, land area and the rate of clearing, land clearing technique and type of the original land. The biggest potential environmental impact is the contribution to global warming impact which emissions are produced mostly from unit plantation. Although plantation has biggest potential to contribute to environmental impact, it also gives biggest reduction to global warming impact. In general, the biggest environmental impact in the LCA category is climate change, followed by photo-oxidant formation and eutrophication. The biggest impacts in the supply chain are from the plantation, especially when choosing the right technique for land clearing. In addition, due to LCA linearity nature, the scenario that we tested does not change the total accumulative environmental impacts.