Estimation of Palm Oil Plantation Carbon Footprint and Reduction Strategy Using the O-LCA and MCDM

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ABSTRACT

According to data obtained from the Greenhouse Gas Inventory Report (GHG) and Monitoring, Reporting, Verification (MPV), GHG emissions are mostly caused by five industries: energy, waste, agriculture, food and land use coalition, and industry. The palm oil industry has grown significantly during the past few decades, particularly in Indonesia and Malaysia. The primary output of the palm oil sector is crude palm oil (CPO). It is anticipated that Indonesia will keep trying to satisfy domestic demand for palm oil. However, people still seek out goods made with palm oil that is environmentally friendly to create. Environmental concerns, particularly the claim that CPO production is a source of carbon release, are another obstacle to Indonesia's CPO exports to European and American nations (Uning et al., 2020). Life Cycle Assessment (LCA) is the recommended approach to measure a product's or process's environmental impact with accurate results, according to a body of literature (Wahyono & Hadiyanto, 2019). Although the life cycle assessment method was first developed to evaluate how items affect the environment, it may also be customized to meet the needs of the business. As a result of this modification, UNEP developed a brand-new technique known as Organizational Life Cycle Assessment (O-LCA). There have not been many studies done in the past that use O-LCA to assess how business processes affect the environment, particularly with the idea of sustainability. Organizational life cycle assessments enable businesses to identify critical environmental operations and make improvements while considering a variety of sustainability variables, as well as other elements like environmental, economic, social, and technological considerations.

Keywords: Carbon Footprint, Palm Oil Plantation, Life Cycle Analysis, Multi-Criteria