

**ESTIMATION OF ENERGY USAGE IN OIL PALM PLANTATION AT  
HILLY AREA**

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**Final Year Project Report Submitted in  
Partial Fulfilment of the Requirements for the  
Degree of Bachelor of Science (Hons.) Plantation Technology and Management  
in the Faculty of Plantation and Agrotechnology  
Universiti Teknologi MARA**


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## DECLARATION

This Final Year Project is a partial fulfilment of the requirements for a degree of Bachelor of Science (Hons.) Plantation Technology and Management, Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

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I hereby declare that I have checked this project and in my opinion, this project is adequate in terms of scope and quality for the award of the degree of Bachelor of Science (Hons.) Plantation Technology and Management, Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

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Peace and Blessings be Upon His Beloved Prophet**

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## **ABSTRACT**

### **ESTIMATION OF ENERGY USAGE IN OIL PALM PLANTATION AT HILLY AREA**

This case study aims to estimate the energy usage and greenhouse gas (GHG) emission in oil palm plantation at hilly area. Energy that use from the machinery will affect the greenhouse gas (GHG) emission. An example of the gas emitted from the machinery is water vapour, carbon dioxide, methane, nitrous oxide, ozone and any fluorocarbons. This study was conducted with five different hilly areas in oil palm plantation in Malaysian that have the slope among  $10^0$ - $60^0$ . The data of field area, fuel consumption (l), the slope of topography and plant maturity was taken starting from Jan-December 2015. Based on the data collection, will determine to evaluate the overall energy use in the oil palm machinery operation and to estimate the quantity of  $\text{CO}_2$  emitted from different field of oil palm. The result shows the hilly topography with different area and gradient of the slope impact for energy usage and GHG emission. The factors that contribute energy usage and  $\text{CO}_2$  higher emitted at hilly area because of the weight of the transportation, great inertia, engine power and high rolling resistance. As the solution to decrease the emission of  $\text{CO}_2$  and energy usage, replace the existing fuel to the biodiesel and better working planning schedule can be applied.