

## **Enhanced biogas production from palm oil mill effluent supplemented with untreated oil palm empty fruit bunch biomass with a change in the microbial community**

### **ABSTRACT**

The biogas and biomethane production in a 50 litre closed stirred tank anaerobic bioreactor treating palm oil mill effluent (POME) supplemented with oil palm biomass in the form of oil palm empty fruit bunch (OPEFB) under mesophilic condition was evaluated. With OPEFB supplementation, the biogas and biomethane generation increased by 63% and 52%, respectively. During this process, we found changes in the OPEFB morphology and microbial community through microbiota analysis using 16S rRNA gene clone library method, after OPEFB was added, suggesting that the increased biogas and biomethane production would be due to enhanced lignocellulosic biomass degradation.

**Keyword:** Biogas; Biomethane; Microbial community; Oil palm empty fruit bunch (OPEFB); Palm oil mill effluent (POME)