ABSTRACT

**POTENTIAL OF GREENHOUSE GAS EMISSIONS FROM
BIOETHANOL INDUSTRY WASTE WATER WITH CASSAVA
AND MOLASSES AS A RAW MATERIAL**

by

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Bioethanol industry produce bioethanol as the main product and also waste water

in large quantity and concentration. Bioethanol industry applying multiple

feedstock systems using two types of raw material those are cassava and molasses.

Thinslop and vinasse are waste water from bioethanol industry with cassava and

molasses as a raw material. Thinslop and vinasse have high COD value so it can

decrease the quality of the environment. Organic compounds will be degradated

into methane gas (CH_4) and carbon dioxide which are showed by the decreasing

COD value of the waste water in the anaerobic process. Methane is classified as

greenhouse gas that can decrease air quality and has warming index 21 times

higher than CO_2's. The treatment of thinslop and vinasse in open lagoons are

potentially produce greenhouse gas, especially methane. The purpose of this

research was to determine the potential of greenhouse gas emissions and to learn

the possibility of applying the mitigation of greenhouse gas emissions in the

bioethanol industry. This research carried out by literature study and calculations

using emission factors that have been agreed globally. The observation data were presented in table and graph then analyzed descriptively

Based on the calculations, the potential of greenhouse gas emissions from waste water bioethanol industry with molasses materials (4.66 ton CO_2e/kL ethanol) was higher than potential of greenhouse gas emissions using cassava materials (0.91 ton CO_2e/kL ethanol). Greenhouse gas mitigation in bioethanol industry with cassava and molasses material were able to be done by utilising the waste water as the source of ecofriendly energy.

Key words: bioethanol, waste water, thinslop, vinasse, greenhouse gas