

Techno-economic Assessment for Biomethane Upgrading for Injection into Natural Gas Grid and Electricity Generation to Electricity Grid

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Keywords: biomethane, upgrading, natural gas grid, electricity

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Introduction

The Malaysian government aims to facilitate the renewable energy (RE) sector by introducing the National Renewable Energy Policy and Action Plan in 2010 (Ministry of Energy, Green Technology and Water, 2010). 4,000 MW of installed RE capacity is targeted by 2030, with 410 MW biogas capacity. Landfill gas (LFG) is identified as one of the potential sources of biogas. Due to rapid urbanization of some major cities in Malaysia, the amount of MSW is expected to increase to 9 million tonnes per year by 2020. Feed-in tariff mechanism has been introduced in Malaysia since 2010 to promote LFG on-grid electricity generation. In contrast, the utilization of upgraded landfill gas, biomethane has remained unexplored for its injection into natural gas grid. This paper aims to perform techno-economic assessment of landfill biomethane injection into natural gas grid in comparison to grid connect electricity generation from landfill gas, taking Seelong Landfill as case study. Seelong Landfill started capturing LFG since 2007, despite LFG is utilized for electricity generation, excess LFG is flared.

Material and methods

The cost analysis of this study takes sanitary landfill equipment, biogas upgrading equipment, compressor and gas infrastructure construction into consideration. It will be then compared to LFG utilization as electricity to identify at what circumstance, landfill biomethane injection into natural gas grid will be more cost and energy effective.

Reference

Ministry of Energy, Green Technology and Water (KeTTHA). 2010. National Renewable Policy & Action Plan. KeTTHA. Selangor.

Acknowledgement

This author is grateful for the financial support of UTM Ainuddin Wahid scholarship towards Ms. Hoo Poh Ying in her Ph.D. pursuits.