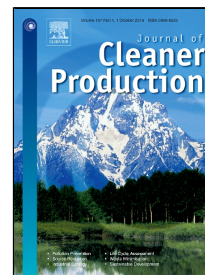


Accepted Manuscript

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PII: S0959-6526(18)32311-4
DOI: 10.1016/j.jclepro.2018.07.322
Reference: JCLP 13776
To appear in: *Journal of Cleaner Production*
Received Date: 25 April 2018
Accepted Date: 31 July 2018

Please cite this article as: R. Contreras-Lisperguer, E. Batuecas, C. Mayo, R. Díaz, F.J. Pérez, C. Springer, Sustainability assessment of electricity cogeneration from sugarcane bagasse in Jamaica., *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.07.322

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Sustainability assessment of electricity cogeneration from sugarcane bagasse in Jamaica.

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Abstract

Cogeneration from sugarcane bagasse in Jamaica represents a significant opportunity to reduce CO₂ emissions and its dependence on a fossil fuel-based energy matrix. Generation of electricity through cogeneration is a huge opportunity in countries where the sugarcane industry is in decline. This article draws on the findings of a case-study on electricity generation through cogeneration in Jamaica to provide some key messages that may be useful for policy-makers and the private sector to make electricity generation by cogeneration a more competitive option for investors.

To this end, this article analyses two scenarios: the first is a Baseline Scenario that assesses the impact of cogeneration technology already installed in a Jamaican sugarcane company where the cogeneration stage produces 2,2 MW; the second one considers that the cogeneration technology is changed to a new biomass based power plant upgrading the cogeneration stage in order to produce 5 MW of power from bagasse. The assessment was carried out by using a complete Life Cycle Assessment, Life Cycle Costing and Social Life Cycle Assessment. The results revealed that generation of electricity from cogeneration derived from bagasse is a suitable alternative adding economic, environmental and social value.

Keywords: Life Cycle Assessment (LCA); Life Cycle Costing (LCC); Social Life Cycle Assessment (SLCA); Biomass; Cogeneration; Green electricity;

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