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Turning trash into cash: Economically viable process of generating electricity from municipal solid waste in Nigeria

Iqbal M Mujtaba¹, M A Al-Obaidi^{1, 2} and C Kara-Zaitri¹¹University of Bradford, UK²Middle Technical University, Iraq

The advancement and economic development of any nation depends mostly on its energy structure. It plays a substantial part in the country's global diplomacy and it acts as a tradable product for receiving the national revenue, which is used to assist government development programs. It likewise functions as contributor into the manufacture of goods and services in the state's industry, agriculture, transport, education and health sectors, as well as an instrument for politics, security and diplomacy. Energy and particularly oil and gas, has constantly added over 70% of Nigeria's federal proceeds. National developmental schemes, and security, are contingent largely on these revenue earnings. Energy, particularly crude oil, has over the past five years added an average of about 25% to Nigeria's gross domestic product (GDP), constituting the uppermost contributor after crop production. Humans cannot live for a long time without the intake of food, the body naturally depends on the food to function properly and similarly, the present world cannot exist for a long time without the use of electricity, everything today almost depend on the use of electricity: health, security, transportation, education, industries, just to mention a few. However, as the world population keeps increasing, the demand for electricity also rises. Over the years, researchers have gone into their comfort zones to conceive alternative sources of electricity generation for a sustainable economy. Electricity from municipal solid waste is one of such results that have created a world-wide impact and have enhanced rapidly with the use of advanced technologies the production of electricity and the reduction of environmental related waste hazards. Municipal solid wastes are non-liquid and nongaseous products of human activities, regarded as being useless. It could take the forms of refuse, garbage and sludge. With the generation of millions of tons of waste each day, these have created a hydra-headed problem beyond the scope of various solid waste management systems especially in developing countries such as Nigeria. Municipal solid wastes (refuse or rubbish) that are non-recyclable can be directly combusted in waste-to-energy facilities as a fuel with minimal processing, to generate green, cheap and stable electricity. The process of waste incineration with the use steam turbine, gas turbine and combined cycle technologies is a green and renewable source of power generation and a solution to the environmental issues resulting from the inabilities of the relevant authorities to effectively manage the huge municipal solid waste generated each day. Electricity is produced without the use of natural resource such as coal, oil and natural gas as fuel. This paper will examine the composition of solid waste generation and in detail the economy of the conversion of municipal solid waste to sustainable electricity with emphasis on Nigeria perspective.

I.M.Mujtaba@bradford.ac.uk