Sustainable Pathways to a Low Carbon Greater Kampala Metropolitan Area

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**Abstract**

This study develops four energy scenarios for GKMA, examining their impacts on the energy management system (EMS) with a view to identify a sustainable pathway to a low carbon 2050. GKMA is the capital of Uganda with a population of 4.1 million and an average GDP of 5.8 for two decades now. However, GKMA’s EMS is unsustainable and thus necessitating a need to identify an alternative pathway to a sustainable 2050. The study uses TIMES-VEDA to address the knowledge gap by examining the energy impacts in commercial, industrial, transport, residential, agricultural and power generation sectors. The analysis suggests that if the current policy trends continue up to 2050, demand would increase from 139.6PJ to 497.42PJ; CO2 emissions will increase from 4.6mn tons to 7mn tons. However, demand would decrease by Kabejja:2.3%, Carbon:3.4% and Lutta:3.3%. The CO2 emissions would decrease by Kabejja:8.57%, Carbon Tax:55.14% and Lutta:60% in 2050. GKMA's goals of a sustainable EMS are plausible with a significant injection of low carbon electricity, energy efficiency improvement and setting up an electrified Kampala metro system. Transportation, industrial and residential sectors are the greatest CO2 emitters and thus require policy interventions. Sustainability is plausible provided a low carbon electrification of GKMA energy policy is implemented.