**Processing Waste to Energy: Key socio-economic & environmental considerations**

A succession of Nairobi city managers have dilly-dallied for far too long with the idea of processing waste to energy. The concept is revisited every time garbage in the city reaches crisis proportions and is quit ambiguously tied to the decommissioning of the atrocious Dandora dumpsite.

One thing that has stood out clearly in this discourse is that the country lacks the resources, technology and expertise to deliver this investment. Foreign direct investment and Public-Private- Partnerships with foreign companies have therefore been floated as mechanisms for acquiring the capital and technology required to establish a waste to energy plant at the Dandora dumpsite. However, there are other overriding considerations that require to be addressed before reaching out to solicit for capital and technical capacity.

First, is the question of how such a venture can enhance the country's commitment to global environmental agreements such as the United Nations Framework Convention on Climate Change (UNFCC) and its Kyotol Protocol. Processing waste to energy offers a chance for implementing the National Determined Mitigation Actions (NAMAs) by reducing greenhouse gas emissions emanating from improper waste handling and disposal.

It should however entail careful selection of the kind of waste to energy processing technology. Waste to energy plants applying incineration technologies have been attributed with release of dioxins which add to atmospheric pollution with effects on public health and global warming.

Waste to energy options involving no combustion are therefore considered to be more environmental friendly with respect to reduced emissions and would be preferable for the country's environmental commitments. These include biomethanation technology for utilizing the organic fraction of the waste through anaerobic digestion using bacteria, to recover methane and residual sludge that can be used as compost. In addition, biomethanation is more attractive for financial compensation from the Clean Development Mechanism, and could thus serve as an alternative source of capital for procurement of waste processing technology.

Secondly, given the multifaceted nature of waste production and its management, a waste to energy investment arrangement ought to be inclusive in terms of creating opportunities for the unemployed and incorporation of livelihood opportunities for local waste pickers and other waste workers. In a city producing over 3000 metric tonnes of waste daily and lacking mechanisms for handling the organic bulk of the waste, a process that requires initial segregation of waste would be most viable.

The biomethanation waste to energy technology therefore facilitates diversion of inorganic material (paper, plastic, metal etc.) to recycling. The technology also encourages cost sharing with citizens thereby reducing the cost of technology transfer while also lowering operational costs.

Such inclusion, diversification of waste to value opportunities and cost cutting measures are limited with incineration as it utilizes the entire waste stream including recyclable paper and plastic in order to generate adequate heat during combustion.

Lastly, organic waste to energy investment would be most viable if implemented as decentralized mini-plants or mini grids in different zones of the city as opposed to one mega project for the whole city. This will enhance waste recovery, cut costs of transporting waste to a centralized facility and increase

employment opportunities. An ideal waste to energy venture should aim at a win for all parties i.e. the environment, the waste workers, the investor, the county and the state.

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